SUPPLEMENTARY DATA FOR

Exercise alone and exercise combined with education both prevent episodes of low back pain and related absenteeism: systematic review and network meta-analysis of randomized controlled trials (RCTs) aimed at preventing back pain

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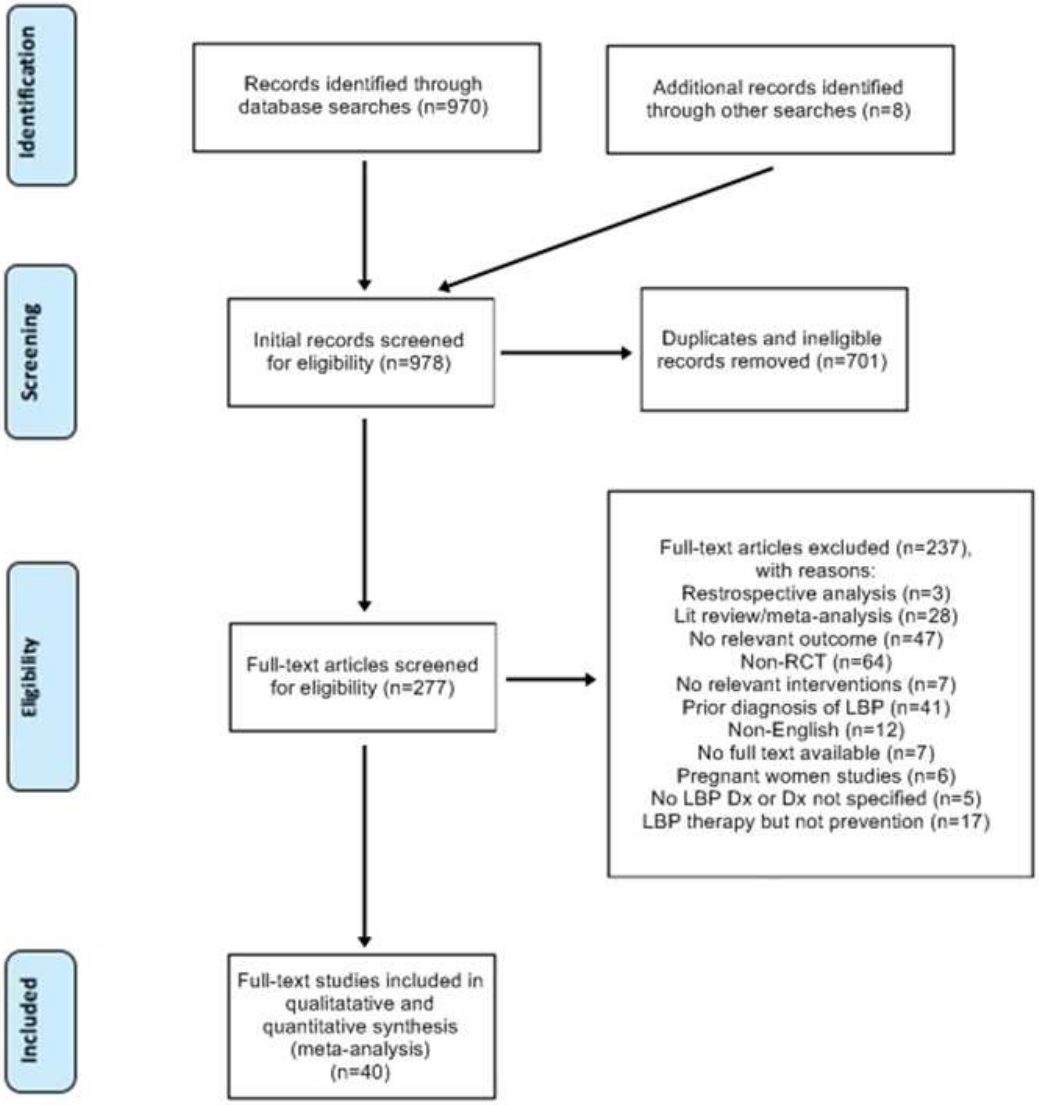
Huang R, *et al. Br J Sports Med* 2020; 54:766–770. doi: 10.1136/bjsports-2018-100035

S Appendix A: PRISMA flow chart

From: Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Annals of internal medicine, 151(4), 264-269.



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S Appendix B: DESCRIPTION THE INTERVENTIONS, POPULATION, STUDY DESIGN, AND OUTCOME DATA

S Table B1: Description of interventions

SC: Standard care/Conservative therapy; A: Education; B: Exercise; C: Exercise +Education; D: Back belt; E: Shoe insoles; F: Ergonomic adjustments; G: Education + Ergonomic adjustments; H: Exercise + Ergonomic adjustments

Author, Year	Type of Trial	Population	Country	Total follow up	Measurements	Sample Size	Outcome (Intervention)	Outcome (Control)	Conclusions
Education vs. Standard Care (A vs. SC)									
Kraus et al, 2013	RCT	Home care attendants	USA	28 mos	LBP injury	N=8935 T: n=4300 C: n=4635	Information on LBP health	No intervention	No significant difference
Lavender et al., 2007	RCT	Employees	Chicago	12 mos	LBP injury	N= 2144 T: n=1557 C: n= 1180	Lift TrainerTM program- 5 -30 min sessions	Video-training (control) program.	No significant difference
van Poppel et al, 1998	RCT	workers in cargo dept of airline company involving manual material handling.	Netherlands	6 mos	LBP Incidence Sick leave because of back pain	N=312 T: n=82 C: n=77	Education- lifting instructions	No intervention	No significant difference
Warming et al, 2008	RCT	Hospital nurses	Denmark	1 yr	LBP episode: perceived LBP Sick leave: due to LBP	N=337 T: n=203 C: n=134	Pt transfer technique based on the law of physics and the natural movement pattern of moving 1 body part at a time	No intervention	No difference
Yu, 2013	RCT	Frontline/Manufacturing workers	China	1 yr	LBP prevalence	N= 1576 T: n= 527 C: n= 1049	Participatory training	Conventional training	No significant difference
Exercise vs Standard Care (B vs. SC)									
Fanucchi et al., 2009	RCT	Children aged 12–13 years, in Grade 6 or Grade 7, had complained of LBP in the	South Africa	6 Mos	LBP prevalence	N= 72 T: n=39 C: n=33	Completed 8 exercise classes of 40–45 mins over 8 wks conducted by a physiotherapist	No intervention	Exercise is effective in reducing prevalence of LBP in children

		past 3 mos							
George, et al. 2011.	RCT	Army soldiers	USA	2 yrs	incidence of LBP that resulted in the seeking of health care	N=2312 T: n=1096 C: n=1216	Core Stabilization exercise program 5 Times/wk for 5 min 12 wks	Traditional exercise: traditional lumbar exercises for the rectus abdominus and oblique abdominal muscles 5xs/wk for 5 min 12 wks	No significant difference
Gerdie, 1995	RCT	Home care employees	Sweden	1 yr	LBP prevalence	N=95 T:n=46 C:n=49	1 hr training program 2x/wk	No intervention	No significant difference
Gram et al., 2012	RCT	Construction-workers	Denmark	3 m	LBP episode	N=65 T:n=34 C:n=31	Strengthening +aerobic exercises 3x/wk for 8 wks	1 hr general health lecture	No significant difference
Gundewall et al, 1993	RCT	Nurses and nurse's aides	Sweden	N/A	Sick leave: work absence due to LBP	N= 60 T: n=28 C: n=32	Back muscle exercises to increase endurance, isometric strength and functional coordination	No Exercise/No instructions.	Significant difference
Honeij et al., 2001	RCT	Female nursing aides and assistant nurses working in the home-careservice for elderly or handicapped.	Sweden	6 mos	LBP episode	N= 189 T:n=90 C: n=99	Individual Physical Training Program	No intervention	No significant differences
Moore et al, 2012	RCT	Outpatients of the Brown Cancer Center, University of Louisville	USA	N/A	LBP episode: incidence of self-reported LBP	N= 30 T: n=17 C: n=13	6 callisthenic exercises to strengthen and stretch muscles that move lumbar and lumbosacral joints and control upright, 2-legged balance (15 min/d 12 mo)	No intervention	Significant differences
Pillastrini et al., 2009	RCT	Nursery school teachers	Italy	2 mos	LBP episode	N=71 T:n=35 C:n=36	Strengthening and streatching exercises 1h twice/wk for 3 wks	No intervention	Significant differences
Sihawong et al, 2014	RCT	Office workers	Denmark	12 mos	LBP episode: LBP lasting >24 h during the past month	N= 563 T: n=282 C: n=281	Muscle stretching and endurance training (2x daily (5 d/wk for 30 s each time) 12 mo).	No exercise Program.	Significant difference
Exercise + Education vs Standard Care (C vs. SC)									
Alexandre et al, 2001	RCT	Female nursing aides from a university hospital who had suffered episodes of back pain for at least six	Brazil	4 Months	intensity of pain was assessed before and after the program using a visual analogue scale	N= 56 T: n=27 C: n=29	Set of exercises and an educational component stressing the ergonomic aspect, administered twice	No intervention	The results suggest that a program of regular exercise with an emphasis on ergonomics

		months.			(VAS).				can reduce musculoskeletal symptoms in nursing personnel
Chaléat-Valayer et al., 2016	RCT	Healthcare workers	France	24-months	Recurrence of LBP with sick-leave	N= 66 T: n=35 C: n=31	(i) 2-hour education session, (ii) 5 weekly 90-mins exercise training sessions in the workplace, and (iii) home-based self-managed exercise program.	Usual care	No significant difference
George, et al. 2011.	RCT	Army soldiers	USA	2 yrs	LBP episode that resulted in the patient seeking of health care	N=2168 T: n=952 C: n=1216	Core Stabilization Program s 5 Times/wk for 5 min 12 wk + Education: evidence-based information on LBP and educational book 1 Time/wk for 45 min Single session	Traditional exercise program	A brief psychosocial education program decreased incidence of low back pain resulting in the seeking of health care.
Glomsrød et al, 2001.	RCT	Pts recruited from referrals and advertisements	Norway	3 yrs.	LBP episode: recurrence of episodes Sick leave: due to episodes of LBP	N= 81 T: n=37 C: n=35	Active back school: didactic session + Strengthening/stretching (2 Sessions/wk for 7 wk; 1 session/wk for 6 wk; each session 60 min (20 Sessions) 13 wk).	No intervention	Significant difference
Kellett et al, 1991	RCT	Employees of kitchen unit production	Sweden	18 mos	Sick leave: attributable to LBP	N=85 T: n=37 C: n=48	1x/wk 20-35 min: warm-up, stretching, strengthening, cardiovascular, coordination exercises and cool down; one-third of classes started with 10-min lecture on theories of back pain prevention	No intervention	No significant difference
Larsen, et al., 2002a	RCT	male conscripts	Denmark	10 mos	LBP episode	N=214 T:n=101 C:n=114	One 40-minute theoretical lesson on back prob- lems and ergonomics and had to perform passive prone extensions of the back daily	No intervention	Significant difference
Lønn et al, 1999	RCT	Pts recruited through local media advertisement and referral from other health professionals	Norway	12 mos	LBP episode Sick leave: due to episodes of LBP	N=81 T: n= 43 C: n=38	Active back school- strength training, stretching exercises (2 Sessions/wk for 7 wk and 1/wk for 6 wk; each session 60 min 20 Sessions (13 wk)	No intervention	Active back School reduced the recurrence and severity of new low back pain episodes.
Mendez, 2001	RCT	Third grade (9-year-old) students	not mentioned	4 yrs	LBP episode	N=93 T: n= 35 C: n= (p:35,	Self-monitored physiotherapy exercises by writing down the daily practice.	Placebo: took part in different academic activities with related themes	No significant difference

						c:36)		Control: Remained in their classrooms with teacher.	
Soukup et al, 1999	RCT	Outpatients from medical and physiotherapist practices;	Norway	12 mos	LBP episode: resulting in professional management Sick leave: LBP resulting in use of sick leave	N=69 T: n=34 C: n=35	Mensendieck exercises and biomechanical/ ergonomic, back anatomy, pain mechanisms, and working posture education	Free to receive treatment or exercise, not offered any prophylactic therapy.	Significant difference for low back pain but not influence sick leave
Soukup 2001	RCT	Pts aged 18- 50 yrs w/ at least one episode of LBP	Norway	3 Yrs	Number of recurrences of low back pain sick leave	N= 66 T: n= 31 C: n= 35	20 group sessions of exercises and ergonomical education.	No prophylactic therapy but free to receive treatment or exercises.	Significant difference for low back pain but not influence sick leave
Suni et al., 2013	RCT	conscripts of 4 successive age cohorts.	Finland	180 days	Number and incidence of LBP at least 5 off-duty days due to LBP.	N=690 T: n=356 C: n=334	2-mo basic training followed by 4-mo specific training, in addition to the usual training.	Conducted service as usual.	Off duty days significantly different but no difference in LBP incidence
Warming et al, 2008	RCT	Hospital nurses Copenhagen	Denmark	12 mos	LBP episode: perceived LBP Sick leave: due to LBP	N=86 T: n=35 C: n= 51	Physical fitness training: aerobic fitness and strength training (2 Times/wk for 60 min 16 Sessions for 8 wk + pt transfer technique based on the law of physics and the natural movement pattern of moving 1 body part at a time	No intervention	No significant differences
Weber et al., 1996	RCT	Healthy Adults	Switzerland	N/A	Pain intensity using visual analogue scale	N= 865 T: n=494 C: n=371	8 months Training Program.	No Control intervention.	No significant difference

Back belt vs. Standard Care (D vs. SC)

Author, Year	Type of Trial	Population	Country	Total follow up	Measurements	Sample Size	Outcome (Intervention)	Outcome (Control)	Conclusions
Alexander et al., 1995	RCT	Healthcare Workers	n/a	3 mos	LBP injuries	N=60 T:n=30 C:n=30	Lumbar support	No intervention	No difference
Kraus et al, 2013	RCT	Home care attendants	USA	28 mos	LBP injury	N=8172 T: n=3837 C: n=4635	Stretch nylon back belts	No intervention	Significant difference

Van Poppel et al., 1998	RCT	subjects working in a cargo department of an airline company involving manual material handling.	Netherlands	6 mos	LBP incidence Sick leave because of back pain	N=312 T: n=82 C: n=77	back belt	No intervention	No significant difference
Shoe Insoles Vs. Standard Care (E vs. SC)									
Fauno 1993.	RCT	Soccer referees in 5-day competition	Denmark	1 wk	Back pain incidence	N=121 T:n=48 C:n=43	Prefabricated shock absorbing heel insoles, 8 mm thick	No intervention	Significant difference
Larsen et al, 2002b.	RCT	Military conscripts	Denmark	3 mos	LBP episode: self-reported back problems	N= 146 T: n=77 C: n=69	Custom-made biomechanical shoe orthoses	No intervention was provided.	Ao significant difference
Mattila et al, 2011	RCT	Finnish defense forces	Finland	6-mos	LBP episode: requiring a visit to the physician and suspension from duty for at least 1 d	N= 220 T: n=73 C: n=147	Shoe insoles: customized insoles made from firm-density polyethylene, hard plastic shell 3/4 the length of the foot (Daily service time, 6 mo)	No insoles	No significant difference
Milgrom et al, 2005	RCT	New recruits beginning elite infantry training	Israel	14 wks	LBP episode: presence of LBP	N= 381 T: n= 143 C: n=152	Semirigid biomechanical orthoses. Soft shoe insoles: soft biomechanical orthoses (14 wk)	Simple shoe inserts, without supportive or shock-absorbing qualities	No differences
Schwellnus et al, 1990	RCT	New military recruits	South Africa	9 wks	LBP episode: overuse back injury	N= 1388 T: n=250 C: n=1261	Neoprene-impregnated with nitrogen bubbles covered with stretch nylon (Daily for 9 wk)	Standard military footwear	Significant difference
Ergonomic adjustments vs. Standard Care (F vs. SC)									
Brisson et al., 1999	RCT	university workers with and without LBP and NP at baseline	Canada	6 mos	LBP Prevalence	N=627 T:n=283 C:n=339	Ergonomic training: two 3 h sessions on workplace adjustments (postural and visual components) and work organisation	No intervention	Significant change in workers under 40 years old
Cook et al., 2004	RCT	call center workers	Australia	6 wks	Presence of LBP	N=59 T:n=30 C:n=29	Adjustments to the desk surface to support the forearm, and adjustments to keyboard and mouse position	Workplace adjustments according to Australian standards	No difference
Haukka, 2008	RCT	kitchen workers with and with LBP at baseline	Finland	24 mos	LBP Prevalence	N=504 T:n=263 C:n=241	Participatory ergonomic program: workers identified problems, evaluated changes and implemented them in collaboration with management and technical staff	No intervention	No difference

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Education + Ergonomic Adjustments vs. Standard Care (G vs. SC)

Danquah et al.,, 2017	RCT	Office workers	Denmark & Greenland	3 mos	LBP episode	N=317 T:n=173 C:n=144	Appointment of local ambassadors and managementsupport, (ii) environmental changes, (iii) a lecture, (iv)a workshop for local adaptation, and (v) e-mails andtext messages.	No intervention	No significant differences
Ijzelenberg et al., 2007	RCT	Workers in physically demanding jobs from large companies	Netherlands	12 mos	LBP episode	N=489 T: n=258 C: n=231	Individually tailored education and training, immediate treatment of subacute LBP, and advice on ergonomic adjustment of the workplace.	Usual care by general practitioner	No significant difference

Exercise + Ergonomic Intervention vs. Standard Care (H vs. SC)

Roussel et al., 2015	RCT	Hospital workers	Belgium	6 mos	LBP Incidence Work absenteeism	N=50 T:n=25 C:n=25	Exercise 6 sessions of 1 h for 6 wks + ergonomics 6 sessions over 6 wks	No intervention	No differences

Education + Exercise vs. Education (C vs. A)

Helewa et al, 1999	RCT	University employees and students, hospital staff, and London residents	Canada	12 mos	LBP episode: continuous or intermittent pain resulting in moderate to severe limitation of function lasting >2 d	N= 270 T: n=113 C: n= 157	Exercise: abdominal muscle strength exercises 7 Times/wk for 5 min 24 mo + classes on spinal anatomy, pathophysiology, posture, lifting techniques, and general fitness. 3x/wk for 90 min	Classes on spinal anatomy, pathophysiology, posture, lifting techniques, and general fitness. 3x/wk for 90 min	No significant difference,
Hill et al., 2015	RCT	Children aged 8 to 11 years.	New Zealand	270 days	Episode of LBP Days off due to LBP	N=708 T: n=469 C: n=239	Taught 4 spinal movements for daily practice +education that emphasized "back awareness"	Education that emphasized "back awareness"	Significant difference
Warming et al, 2008	RCT	Hospital nurses	Denmark	12 mos	LBP episode: perceived LBP Sick leave: due to LBP	N=337 T: n=203 C: n=134	Aerobic fitness and strength training (2x/wk for 60 min 16 sessions for 8 wk + pt transfer technique based on the law of physics and the natural movement pattern of moving 1 body part at a time	Pt transfer technique based on the law of physics and the natural movement pattern of moving 1 body part at a time	No difference

Back belts vs. Education (D vs. A)

Allen and Wilder, 1996	RCT	Employees of the Veterans Administration Hospital	USA	6 mos	LBP episode: back injury	N= 47 T: n=23 C: n=24	Training on proper use of back-belts (while on duty whenever lifting ps for 6 mos)	Training in biomechanics and proper lifting techniques	No significant difference
Kraus et al, 2013	RCT	Home care attendants	USA	28 mos	LBP injury	N=8137 T: n= 3837 C: n=4300	Stretch nylon back belts	Information on LBP health-safety meetings	No significant difference
van Poppel et al, 1998	RCT	Airline employees	Netherlands	6 mos	LBP episode: in the past month Sick leave: time lost from work in the past month	N= 312 T: n=83 C: n=82	Lumbar support with adjustable elastic side pulls with Velcro fasteners and flexible stays (Wear at all times during work hours 6 mo) + lifting instructions	Lifting instructions (1 Session for 2 h and 2 sessions for 1.5 h 3 Sessions for 12 wk)	No significant difference
Education + Exercise vs Exercise (C vs. B)									
George, et al. 2011.	RCT	Army soldiers	USA	2 yrs	LBP episode that resulted in the patient seeking of health care	N=2048 T: n=952 C: n=1096	Core Stabilization Program 5 x/wk for 5 min 12 wk + Education: info on LBP and educational book 1x/wk for 45 min Single session	Core Stabilization Program	Brief psychosocial education program decreased incidence of LBP

S Table B2: Baseline Characteristics of Included Studies

NR: Nor Reported; N/A: Not Applicable; mos: months; y: year; T; treatment; C: control; LBP: Low back pain

	Education vs Standard Care (A vs. SC)				
Trial-(Author/year)	**Kraus et al, 2013**	**Lavender et al., 2007**	**van Poppel et al, 1998**	**Warming et al, 2008.**	**Yu,2013**
Arms	3	2	3	3	3
Total Follow up	28 mos	12 mos	6 mos.	12 mos	1y
N	8935	1977	82	337	1576
Male; n(%)	271 (3%)	1896 (96%)	N/A	0%	1455 (92%)
Age (Mean or Median; SD)	N/A (18-65 y)	33.5 (range 18–65)	35.4 (7.7)	34.8 (9.3)	29.1(7.3)
Pain symptom duration	N/A	Any employee who had minor injuries and reported to work.	History of back pain	NA	NA
Co-interventions	N/A	N/A	N/A	N/A	Didactic Training.

	Exercise vs. Standard Care (B vs. SC)								
Trial-(Author/year)	**Fanucchi et al., 2009**	**Gerdie et al., 1999**	**George et al., 2011**	**Gram et al., 2012**	**Gundewall et al, 1993**	**Horneij, 2001**	**Moore et al, 2012**	**Pillastrini et al., 2009**	**Sihawong et al, 2014**
Arms	2	2	3	2	2	3	2	2	2
Total Follow up	6 mos	1 yr	2 yrs	3 mos	N/A	12 and 18 mos	12 mo	2 mos	12 mos
N	72	95	2312	65	60	103	30	71	563
Male; n(%)	39 (54.2%)	0	1628 (70.4%)	(100%)	(1%)	0%	(23%)	0	174 (31%)
Age (Mean or Median; SD or range)	12 (0.7)	N/A	21.7 (4.1)	43.7 (16.5)	37.5 (10.5)	45 (23-62)	49.0 (43-63)	I: 44.7 (7.4) C: 43.5 (7.9)	37.1 (10.4)
Pain symptom duration	Past 3 mos	N/A	N/A	With or without history of LBP	LBP during the previous 12 mos	Sick leave due to neck, shoulder and/or back pain during preceding 12 mos reported by 13% (n = 37 pts.)	No history of chronic back pain	With or without history of LBP	Previous 6 mos
Co-interventions	Intervention group: weekly home exercise program including exercises taught in class.	N/A	N/A	N/A	N/A	N/A	Given a descriptive "travel card" w/ drawings & exercise times.	N/A	N/A

	Education + Exercise vs. Standard Care (C vs. SC)											
Trial-(Author/year)	**Alexandre 2001 at al.,**	**Chaleat-Valayer at al., 2016**	**George et al., 2011**	**Glomsrød et al, 2001.**	**Kellett et al, 1991**	**Larsen, et al., 2002a**	**Lønn et al, 1999.**	**Mendez; 2001**	**Soukup et al, 1999 and 2001**	**Suni et al., 2013**	**Warming et al, 2008**	**Weber et al., 1996**
Arms	2	2	3	2	2	2	2	3	2	2	2	2
Total Follow up	2 mos and 7 days	24 mos	2 yrs	36 mos	18 mos	10 mos	12 mos	4 yrs	12 mos	180 Days	12 mos	8 mos
N	56	353	2312	72	85	314	81	93	77	1409	86	722
Male; n(%)	NA	(23%)	1628 (70.4%)	(46%)	(70%)	100%	(46%)	55(52%)	(47%)	100%	0%	107 (21.7%)
Age (Mean or Median; SD)	T=36.9(8.0), C=37.5(6.1)	47.1(8.5)	21.7 (4.1)	39.8 (6.4)	41.7 (10.1)	21	39.4 (19.2-49.8)	9 y/o	39.6 (21.2-49.8)	19 yrs	34.8 (9.3)	<39 121(24.5%) 40-49 169 (24.2%) >50 194 (39.3)
Pain symptom duration	back pain > 6 mos.	Over the previous 3 yrs, ≥1 episode of LBP of <3 mons', with/ without sick leave	N/A	N/A	N/A	No LBP episodes at time of enrollment	N/A	N/A	had finished treatment for a low back pain episode	N/A	N/A	56.6% of pts reported current pain, mainly in the low back.
Co-interventions	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Hygiene Program	N/A	N/A	N/A	N/A

	Back belt vs. Standard Care (D vs. SE)		
Trial-(Author/year)	**Alexander et al., 1995**	**Kraus et al, 2013**	**Van Poppel et al. 1998**
Arms	2	3	4
Total Follow up	3 mos	28 mos	6 mos
N	60	8172	160
Male; n(%)	N/A	197 (2.4%)	N/A
Age (Mean or Median; SD or range)	N/A	N/A (18-65 y)	33.8 (7.0)
Pain symptom duration	N/A	N/A	172 people had a history of low back pain before and 49 people had low back pain at the start of the study.
Co-interventions	N/A	N/A	N/A

	Shoe insoles Vs. Standard Care (E vs. SC)				
Trial-(Author/year)	**Fauno, 1993**	**Larsen et al, 2002b.**	**Mattila et al, 2011**	**Milgrom et al, 2005**	**Schwellnus et al,1990**

Arms	2	2	2	3	2
Total Follow up	1 wk	3 mos	6 mos	14 wks	9 wks
N	121	146	228	381	1388
Male; n(%)	"majority"	145 (99%)	100%	100%	N/A
Age (Mean or Median; SD)	35.90 ± 9.95	18-24	19 (18 – 29)	18.8 (0.7)	18.5 (1.2)
Pain symptom duration	N/A	N/A	Subjects with a prior history of LBP excluded	N/A	N/A
Co-interventions	None	N/A	N/A	N/A	N/A

	Ergonomic Occupational Adjustment vs. Standard Care (F vs. SC)		
Trial-(Author/year)	**Brisson et al., 1999**	**Cook et al., 2004**	**Haukka et al, 2008.**
Arms	2	2	2
Total Follow up	6 mos	6 wks	24 mos
N	627	59	504
Male; n(%)	125 (20%)	N/A	3%
Age (Mean or Median; SD)	43	N/A	median 47
Pain symptom duration	University workers with and without LBP and NP at baseline	Workers with and without LBP at baseline	Kitchen workers with and without LBP and NP at baseline
Co-interventions	N/A	Individual workstation assessments and Both groups received edu on workstation set-up and working posture.	N/A

	Education + Ergonomic adjustments vs. Standard Care (G vs. SC)	
Trial-(Author/year)	**Danquah et al., 2017**	**Ijzelenberg et al., 2007**
Arms	2	2
Total Follow up	3 mos	12 mos
N	317	489
Male; n(%)	(34%)	253 (70%)
Age (Mean or Median; SD)	46 (10)	41.3 (9.6)
Pain symptom duration(SD)	With and without LBP history	musculoskeletal pain in the past 12 mos
Co-interventions	N/A	N/A

	Exercise + Ergonomic Adjustments vs. Standard Care (H vs. SC)
Trial-(Author/year)	**Roussel et al., 2015**
Arms	2
Total Follow up	6 mos
N	69
Male; n(%)	12

Age (Mean or Median; SD)	41.4()
Pain symptom duration	Healthy pts with an increased risk for the development of LBP
Co-interventions	Changes in hospital Policy, General Health, Education and Psychosocial Approach.

	Exercise + Education vs. Education (C vs. A)		
Trial-(Author/year)	**Helewa et al, 1999**	**Hill et al., 2015**	**Warming et al, 2008**
Arms	2	2	3
Total Follow up	12 mos	270 days	12 mos
N	270	708	181
Male; n(%)	(47%)	51%	N/A
Age (Mean or Median; SD)	38.4 (9.2)	9.4 (0.63)	34.8 (9.3)
Pain symptom duration	No LBP in previous 5 yrs that required surgery.	With or without LBP history	LBP >3 mos duration.
Co-interventions	Back Education at Baseline 1 & 2 Yrs.	N/A	All pts received "The Back Book".

	Back Belt vs. Education (D vs. A)		
Trial-(Author/year)	**Allen and Wilder, 1996.**	**Kraus et al, 2013.**	**van Poppel et al, 1998.**
Arms	2	3	4
Total Follow up	6 mos	28 mos	6 mos
N	47	8137	83
Male; n(%)	N/A	260 (3%)	N/A
Age (Mean or Median; SD)	N/A	N/A (18-65 y)	35.1 (7.8)
Pain symptom duration	N/A	N/A	Indv. with current or past back pain who felt they might injure or reinjure their backs by performing the tests excluded from the trunk-muscle tests.
Co-interventions	N/A	N/A	N/A

	Education + Exercise vs Exercise (C vs. B)
Trial-(Author/year)	**George et al., 2011**
Arms	4
Total Follow up	2 yrs
N	2048
Male; n(%)	(71%)
Age (Mean or Median; SD)	22.0 (4.2)
Pain symptom duration(SD)	No previous history of LBP
Co-interventions	N/A

S Table B3: Summary of bias of included studies – Cochrane Review Rating System

High Chance of bias(<6)= 17 studies(42.5%); Medium Chance of Bias (7-9)= 20 studies(50%) Low chance of Bias (10-12)=3 studies(7.5%)

Trial	Randomization	Allocation concealment	Blinding of participants	Blinding of care provider	Blinding of outcome assessment	Drop-out rate described / acceptable	Intention to treat	Free of Selective reporting	Similarity of baseline	Co-interventions avoided or similar	Compliance acceptable	Time of outcome assessment similar	Overall quality rating
Alexandre et al, 2001	Yes	Yes	Yes	No	No	Not clear	Yes	Yes	Yes	Yes	Yes	Yes	9/12
Alexander, 1995	No	No	No	No	No	Yes	Yes	Yes	No	No	No	Yes	3/12
Allen & Wilder 1996	Yes	No	No	No	No	Yes	No	No	No	Yes	n/a	n/a	3/12
Brisson et al., 1999	Yes	n/a	No	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	7/12
Cook et al., 2004	Yes	No	No	No	No	Yes	Yes	Yes	No	No	No	Yes	5/12
Chaléat-Valayer et al., 2016	Yes	Yes	No	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	8/12
Danquah et al., 2017	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	8/12
Fanucchi et al., 2009	Yes	Yes	Yes	No	N/A	Yes	Yes	No	Yes	Yes	Yes	Yes	9/12
Fauno 1993	No	No	No	No	No	No	No	Yes	Yes	Yes	n/a	Yes	4/12
Gerdle, 1995	No	No	No	No	No	No	No	Yes	No	Yes	Yes	Yes	4/12
George, et al. 2011.	Yes	Yes	No	No	Yes	No	No	No	No	n/a	n/a	Yes	4/12

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Glomsrød et al, 2001	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	n/a	n/a	6/12
Gram et al.,2012	Yes	Not clear	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8/12
Gundewall et al, 1993	Yes	No	No	No	No	Yes	No	Yes	No	Yes	Yes	Yes	6/12
Helewa et al. 1999	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	8/12
Hill et al., 2015	Yes	Not clear	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8/12
Haukka et al., 2008	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9/12
Horneij, 2001	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8/12
Ijzelenberg et al., 2007	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	n/a	6/12
Kellett et al, 1991	Yes	No	No	No	No	No	No	Yes	Yes	Yes	n/a	n/a	4/12
Kraus et al., 2013	No	No	No	Yes	Yes	No	No	Yes	No	n/a	n/a	Yes	4/12
Larsen, et al., 2002a	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	7/12
Larsen et al, 2002b.	Yes	n/a	No	No	No	No	Yes	n/a	No	Yes	Yes	Yes	5/12
Lavender at al., 2007	No	No	No	No	No	Yes	No	Yes	No	Yes	No	No	4/12
Lønn et al, 1999	Yes	No	No	No	No	Yes	No	Yes	Yes	Yes	n/a	n/a	5/12
Mattila 2011	Yes	n/a	No	No	Yes	Yes	Yes	Yes	Yes	Yes	n/a	Yes	8/12
Mendez, 2001	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	8/12
Milgrom 2005	n/a	n/a	No	No	No	Yes	Yes	n/a	Yes	Yes	No	Yes	5/12
Moore et al, 2012	Yes	No	No	No	No	No	No	Yes	No	Yes	Yes	Yes	11/12
Pillastrini 2009	Yes	Not clear	No	No	No	Yes	Yes	Yes	Yes	Yes	n/a	Yes	7/12
Roussel et al., 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	n/a	11/12
Schwellnus 1990	n/a	n/a	No	No	No	No	No	n/a	No	Yes	Yes	Yes	3/12

Sihawong et al, 2014	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11/12
Soukup et al., 1999	Yes	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	7/12
Soukup et al, 1999 and 2001	Yes	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	7/12
Suni et al., 2013	Yes	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	7/12
Van Poppel et al., 1998	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	Yes	7/12
Warming et al, 2008	Yes	Yes	No	No	No	No	Yes	Yes	Yes	n/a	n/a	Yes	6/12
Weber et al., 1996	Yes	No	Yes	No	No	No	Yes	N/a	Yes	Yes	Yes	Yes	7/12
Yu 3013	Yes	Yes	Yes	No	n/a	No	Yes	Yes	Yes	Yes	No	Yes	8/12

S Table B4: Outcomes for LBP Episode

SC: Standard care/Conservative therapy; A: Education; B: Exercise; C: Exercise +Education; D: Back belt; E: Shoe insoles; F: Ergonomic adjustments; G: Education + Ergonomic adjustments; H: Exercise + Ergonomic adjustments

Author, year	Treatment 1	Treatment 2	I-outcome (n)	I total (n)	C-outcome (n)	C total (n)	Follow up	Outcome measure
Alexandre et al., 2001	C	SC	10	27	14	29	2 mos	LBP episode
Alexander, 1995	D	SC	1	30	2	30	3 mos	LBP episode
Allen and Wilder, 1996	D	A	0	23	3	24	6 mos	LBP episode
Brisson et al., 1999	F	SC	22	283	24	339	6 mos	LBP prevalence
Chaléat-Valayer et al., 2016	C	SC	121	133	129	138	2 yr	LBP episode
Cook et al., 2004	F	SC	4	30	8	29	6 wks	LBP prevalence
Danquah et al., 2017	G	SC	59	153	52	126	3 mos	LBP prevalence
Fanucchi et al., 2009	B	SC	16	38	26	32	6 mos	LBP episode
Fauno et al., 1993.	E	SC	30	48	40	43	1 wk	LBP episode
George et al., 2011.	C	SC	132	952	213	1216	24 mos	LBP episode
George et al., 2011.	C	B	132	952	193	1096	24 mos	LBP episode
George et al., 2011.	B	SC	193	1096	213	1216	24 mos	LBP episode
Gerdie et al., 1999	B	SC	19	32	27	45	1 yr	LBP prevalence
Glomsrød et al., 2001	C	SC	20	37	27	35	36 mos	LBP episode
Gram et al., 2012	B	SC	17	34	17	31	3 mos	LBP prevalence
Haukka, 2008	F	SC	126	263	111	241	24 mos	LBP prevalence
Helewa et al., 1999	C	A	28	113	37	157	12 mos	LBP episode
Hill et al., 2015	C	A	305	469	173	239	270 days	LBP episode
Honeij et al., 2001	B	SC	7	45	8	58	6 mos	LBP aggravation
Ijzelenberg et al., 2007	G	SC	92	185	81	175	12 mos	LBP episode
Kraus et al., 2013	D	SC	77	3837	109	4635	28 mos	LBP episode
Kraus et al., 2013	A	SC	89	4300	109	4635	28 mos	LBP episode
Kraus et al., 2013	D	A	77	3837	89	4300	28 mos	LBP episode
Larsen et al., 2002a.	C	SC	9	101	28	113	10 mos	LBP episode
Larsen et al., 2002b.	E	SC	9	58	9	63	3 mos	LBP episode
Lavender et al.	A	SC	66	957	76	957	12 mos	LBP injury

2007								
Lønn et al., 1999	C	SC	11	38	20	35	12 mos	LBP episode
Mattila et al., 2011	E	SC	24	73	42	147	6 mos	LBP episode
Mendez, 2001	C	SC	1	35	8	62	4 yrs	LBP episode
Milgrom et al., 2005	E	SC	16	51	18	53	14 wks	LBP episode
Moore et al., 2012	B	SC	0	13	10	17	12 mos	LBP episode
Pillastrini, 2009	B	SC	3	35	7	36	2 mos	LBP episode
Roussel et al., 2015	H	SC	2	25	1	25	6 mos	LBP episode
Schwellnus et al., 1990	E	SC	2	237	24	1151	9 wks	LBP episode
Sihawong et al., 2014	B	SC	23	261	53	269	12 mos	LBP episode
Soukup et al., 1999	C	SC	11	34	20	35	12 mos	LBP episode
Soukup et al., 2001	C	SC	18	31	27	35	36 mos	LBP episode
Suni et al., 2013	C	SC	58	356	47	334	6 mos	LBP episode
van Poppel et al., 1998	A	SC	50	142	49	140	6 mos	LBP episode
van Poppel et al., 1998	D	SC	48	134	51	148	6 mos	LBP episode
van Poppel et al., 1998	D	A	48	134	50	142	6 mos	LBP episode
Warming et al., 2008	C	A	14	35	22	33	12 mos	LBP episode
Warming et al., 2008	A	SC	22	33	29	51	12 mos	LBP episode
Warming et al., 2008	C	SC	14	35	29	51	12 mos	LBP episode
Weber et al., 1996	C	SC	201	494	140	371	6 mos	LBP prevalence
Yu et al., 2013	B	SC	138	527	138	505	1 yr	LBP prevalence

Abbreviations: SC: Standard care/Conservative therapy; A: Education; B: Exercise; C: Exercise +Education; D: Back belt; E: Shoe insoles; F: Ergonomic adjustments; G: Education + Ergonomic adjustments; H: Exercise + Ergonomic adjustments

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S Table B5: Outcomes for Work Absence due to LBP

Author, year	Treatment 1	Treatment 2	Outcome measure	Follow up	I-outcome (n)	I total (n)	C-outcome (n)	C-total (n)
Chaléat-Valayer et al., 2016	C	SC	sick leave	2 yr	35	147	31	151
Glomsrød et al., 2001	C	SC	sick leave	36 mos	12	37	18	35
Gundewall et al., 1993	B	SC	work absence	13 mos	1	28	12	32
Hill et al., 2015	C	A	days off due to LBP	270 days	21	469	15	239
Ijzelenberg et al., 2007	G	SC	sick leave	12 mos	18	185	18	175
Kellett et al., 1991	C	SC	sick leave	18 mos	8	37	14	48
Lønn et al., 1999	C	SC	sick leave	12 mos	7	38	11	35
Roussel et al., 2015	H	SC	work absenteeism	6 mos	2	25	3	25
Soukup et al., 1999	C	SC	sick leave	12 mos	10	34	11	35
Soukup et al., 2001	C	SC	sick leave	36 mos	13	31	18	35
Suni et al., 2013	C	SC	sick leave		5	356	7	334
van Poppel et al., 1998	A	SC	sick leave	6 mos	12	142	17	140
van Poppel et al., 1998	D	SC	sick leave	6 mos	17	134	13	148
van Poppel et al., 1998	D	A	sick leave	6 mos	17	134	12	142
Warming et al., 2008	C	A	sick leave	12 mos	2	35	5	33
Warming et al., 2008	A	SC	sick leave	12 mos	5	33	5	51
Warming et al., 2008	C	SC	sick leave	12 mos	2	35	5	51

Abbreviations: SC: Standard care/Conservative therapy; A: Education; B: Exercise; C: Exercise +Education; D: Back belt; E: Shoe insoles; F: Ergonomic adjustments; G: Education + Ergonomic adjustments; H: Exercise + Ergonomic adjustment

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S Appendix C: INACTIVE CONTROL COMPARISONS FROM NETWORK META-ANALYSES

S Table C1: Outcomes for Episode of LBP for treatment strategies compared with inactive control from the network meta-analysis (treatments ordered according to the SUCRA score)

Treatment	NMA Odds Ratio (95% CrI)	Probability of Being Best (PrBest)	SUCRA	Pair-wise Odds Ratio (95% CI)	Heterogeneity I^2 (%)
Exercise + Education (C)	**0.59 (0.41, 0.82)**	100.0	81.3	**0.58 (0.39, 0.83)**	76%
Exercise (B)	**0.59 (0.36, 0.92)**	99.9	79.4	**0.59 (0.35, 0.93)**	85%
Shoe Insoles (E)	0.66 (0.35, 1.20)	99.3	69.3	0.66 (0.35, 1.20)	68%
Back Belt (D)	0.79 (0.39, 1.48)	97.6	54.6	0.89 (0.42, 1.90)	0%
Education (A)	0.89 (0.56, 1.42)	97.1	41.9	0.98 (0.56, 1.80)	0%
Ergonomic Adjustments (F)	0.92 (0.44, 1.83)	93.6	41.7	0.92 (0.45, 1.80)	27%
Education + Ergonomic Adjustments (G)	1.16 (0.39, 3.45)	80.7	30.5	1.1 (0.39, 3.30)	0%
Exercise + Ergonomic Adjustments (H)	2.59 (0.16, 86.83)	34.9	21.5	2.5 (0.15, 99.00)	0%

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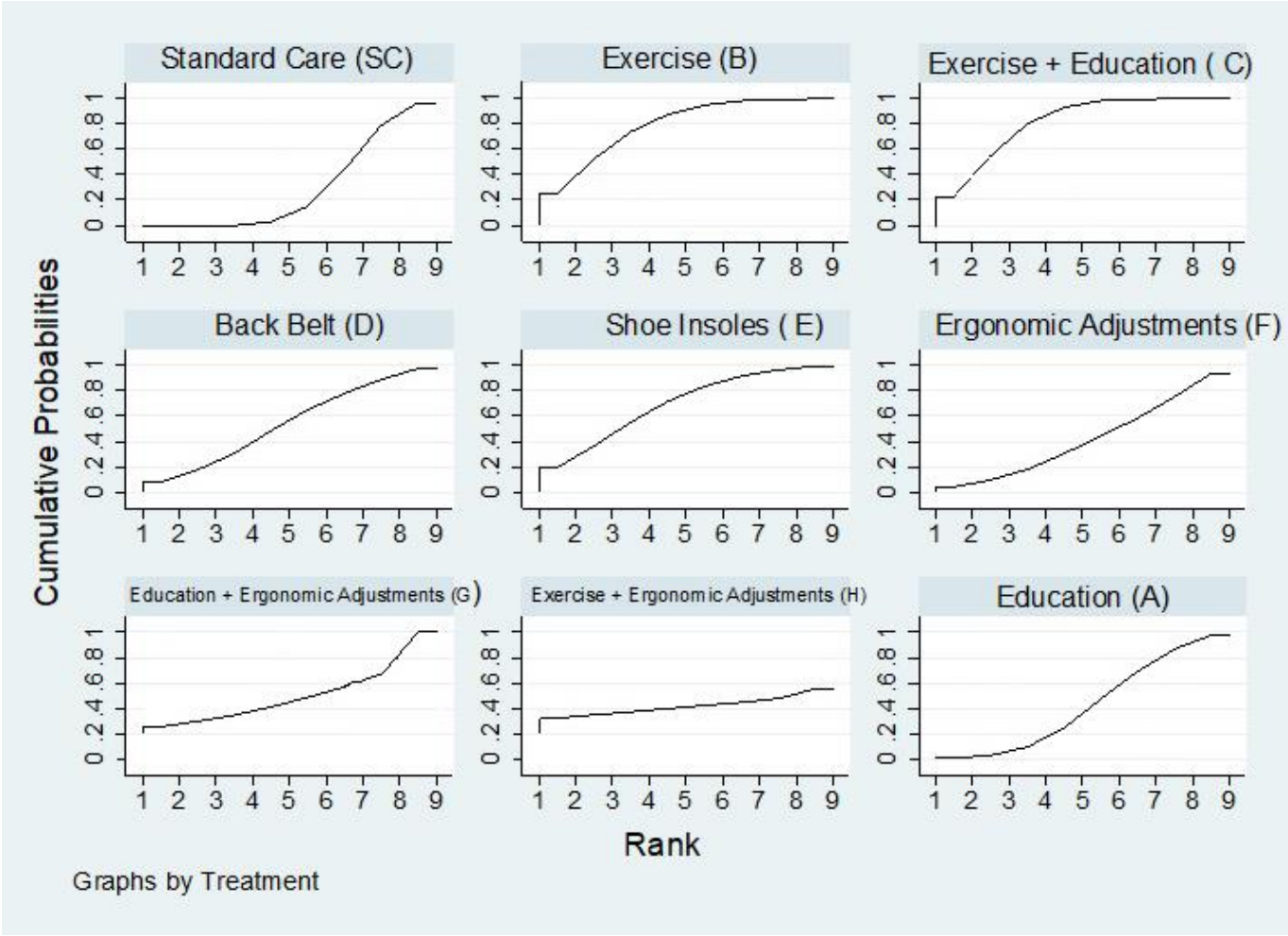
S Figure C1: Cumulative probability plots for Episode of LBP



S Table C2: Outcomes for Work Absence due to LBP for treatment strategies compared with inactive control from the network meta-analysis (treatments ordered according to the probability of being the best)

Treatment	NMA Odds Ratio (95% CrI)	Probability of Being Best (PrBest)	SUCRA	Pair Wise Odds Ratio (95% CI)	Heterogeneity I^2 (%)
Exercise (B)	**0.04 (0.00, 0.34)**	100.0	99.0	**0.04 (0.00, 0.34)**	0%
Exercise + Education (C)	0.73 (0.45, 1.09)	99.0	60.2	0.74 (0.45, 1.10)	0%
Exercise + Ergonomic Adjustments (H)	0.64 (0.06, 5.25)	79.6	54.1	0.61 (0.06, 4.90)	0%
Education (A)	0.91 (0.4, 2.29)	89.2	42.2	0.89 (0.33, 2.50)	0%
Education + Ergonomic Adjustments (G)	0.94 (0.34, 2.67)	80.3	39.5	0.94 (0.33, 2.70)	0%
Back Belt (D)	1.21 (0.47, 3.53)	61.1	23.3	1.10 (0.33, 3.30)	0%

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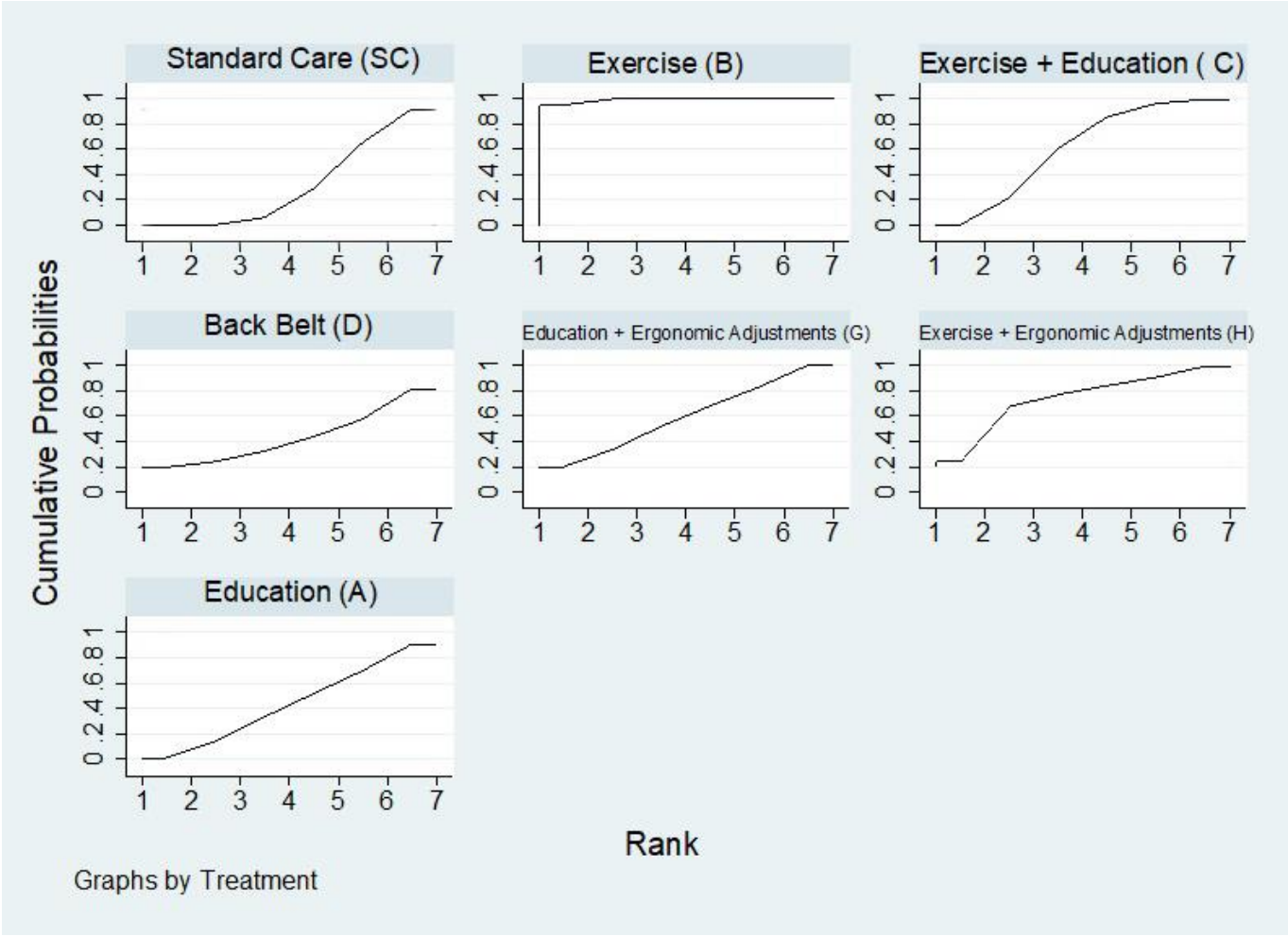
S Figure C2: Cumulative probability plots of Work Absence due to LBP



S Appendix D: RESULTS OF NETWORK META-ANALYSES.

S Table D1: Results (OR, with 95% credible intervals) of network meta-analysis for RCTs reporting Episode of LBP.

OR from control vs. Treatment shown in the lower diagonal. ORs from treatment strategies compared with control are shown in the upper diagonal. Significant differences in the relative effects between a pair of interventions are given in bold.

	Standard Care (SC)	**Exercise (B)**	**Exercise + Education (C)**	**Back Belt (D)**	**Shoe Insoles (E)**	**Ergonomic Adjustments (F)**	**Education + Ergonomic Adjustments (G)**	**Exercise + Ergonomic Adjustments (H)**	**Education (A)**
Standard Care (SC)	**SC**	**0.59 (0.36;0.92)**	**0.59 (0.41;0.82)**	0.79 (0.39;1.48)	0.66 (0.35;1.2)	0.92 (0.44;1.83)	1.16 (0.39;3.45)	2.59 (0.16;86.83)	0.89 (0.56;1.42)
Exercise (B)	**1.68 (1.09;2.82)**	**B**	0.99 (0.58;1.73)	1.32 (0.6;2.95)	1.11 (0.52;2.42)	1.54 (0.68;3.69)	1.93 (0.62;6.73)	4.38 (0.26;157.73)	1.50 (0.82;3.02)
Exercise + Education (C)	**1.69 (1.22;2.47)**	1.01 (0.58;1.74)	**C**	1.33 (0.64;2.72)	1.12 (0.56;2.24)	1.55 (0.72;3.41)	1.95 (0.64;6.36)	4.40 (0.27;151.66)	1.51 (0.95;2.57)
Back Belt (D)	1.27 (0.68;2.57)	0.76 (0.34;1.66)	0.75 (0.37;1.55)	**D**	0.84 (0.34;2.08)	1.17 (0.45;3.1)	1.46 (0.43;5.46)	3.31 (0.19;121.0)	1.13 (0.61;2.31)
Shoe Insoles (E)	1.52 (0.84;2.89)	0.90 (0.41;1.94)	0.90 (0.45;1.8)	1.20 (0.48;2.93)	**E**	1.39 (0.55;3.58)	1.75 (0.52;6.26)	3.96 (0.23;141.16)	1.36 (0.65;3.02)
Ergonomic Adjustments (F)	1.09 (0.55;2.25)	0.65 (0.27;1.47)	0.64 (0.29;1.39)	0.86 (0.32;2.2)	0.72 (0.28;1.82)	**F**	1.26 (0.35;4.68)	2.85 (0.16;104.1)	0.97 (0.43;2.31)
Education + Ergonomic Adjustments (G)	0.87 (0.29;2.58)	0.52 (0.15;1.62)	0.51 (0.16;1.56)	0.69 (0.18;2.33)	0.57 (0.16;1.94)	0.80 (0.21;2.87)	**G**	2.25 (0.11;88.92)	0.78 (0.24;2.52)
Exercise + Ergonomic Adjustments (H)	0.39 (0.01;6.31)	0.23 (0.01;3.86)	0.23 (0.01;3.73)	0.30 (0.01;5.27)	0.25 (0.01;4.43)	0.35 (0.01;6.22)	0.44 (0.01;8.85)	**H**	0.34(0.01;5.89)
Education (A)	1.12 (0.7;1.77)	0.67 (0.33;1.23)	0.66 (0.39;1.05)	0.88 (0.43;1.65)	0.74 (0.33;1.55)	1.03 (0.43;2.34)	1.29 (0.4;4.25)	2.90 (0.17;99.21)	**A**

S Table D2: Results (ORs, with 95% credible intervals) of network meta-analysis for RCTs reporting Work Absence due to LBP.

OR from control vs. Treatment shown in the lower diagonal. ORs from treatment strategies compared with control are shown in the upper diagonal. Significant differences in the relative effects between a pair of interventions are given in bold.

	Standard Care (SC)	**Exercise (B)**	**Exercise + Education (C)**	**Back Belt (D)**	**Education + Ergonomic Adjustments (G)**	**Exercise + Ergonomic Adjustments (H)**	**Education (A)**
Standard Care (SC)	**SC**	**0.04 (0.0;0.34)**	0.73 (0.45;1.09)	1.21 (0.47;3.53)	0.94 (0.34;2.67)	0.64 (0.06;5.25)	0.91 (0.4;2.29)
Exercise (B)	**24.24 (2.98;1023.66)**	**B**	**17.68 (1.99;744.66)**	**28.71 (3.0;1368.99)**	**22.49 (2.24;1068.68)**	16.53 (0.6;997.87)	**22.0 (2.38;913.43)**
Exercise + Education (C)	1.37 (0.92;2.22)	**0.06 (0.0;0.5)**	**C**	1.66 (0.61;5.51)	1.29 (0.45;4.16)	0.89 (0.08;7.62)	1.25 (0.52;3.6)
Back Belt (D)	0.83 (0.28;2.15)	**0.03 (0.0;0.33)**	0.60 (0.18;1.64)	**D**	0.77 (0.18;3.16)	0.52 (0.04;5.35)	0.75 (0.27;2.17)
Education + Ergonomic Adjustments (G)	1.07 (0.38;2.94)	**0.04 (0.0;0.45)**	0.78 (0.24;2.24)	1.30 (0.32;5.65)	**G**	0.69 (0.05;6.98)	0.96 (0.27;3.91)
Exercise + Ergonomic Adjustments (H)	1.56 (0.19;16.93)	0.06 (0.0;1.67)	1.13 (0.13;12.59)	1.93 (0.19;26.03)	1.45 (0.14;20.91)	**H**	1.46 (0.15;18.32)
Education (A)	1.10 (0.44;2.53)	**0.05 (0.0;0.42)**	0.80 (0.28;1.91)	1.34 (0.46;3.68)	1.04 (0.26;3.66)	0.68 (0.05;6.62)	**A**

S Appendix E: ASSESSMENT OF MODEL FIT AND BETWEEN STUDY HETEROGENEITY

S Table E1: Residual deviance data for all network meta-analyses.

	Model fit (residual deviance)					
	Dbar	**pD**	**DIC**	**Data Points**	**Ratio**	**Multivariate PSRF**
1. Episode of LBP	83.69	61.09	144.78	74	1.13	1.00
2. Work Absence due to LBP	23.75	20.76	44.51	26	0.91	1.03

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S Table E2: Tests of heterogeneity for studies included in the standard pair-wise analyses for Episode of LBP

Treatment comparison	No. of comparisons (by treatment)	Chi-squared statistic	Degrees of freedom	P-value	I^2 (%)**
C vs. SC	11	14.88	10	0.136	32.80 %
D vs. SC	2	0.18	1	0.672	0.00 %
D vs. A	1	0.00	0	-	-
F vs. SC	3	1.33	2	0.513	0.00 %
B vs. SC	6	11.51	5	0.042	56.50 %
E vs. SC	5	2.85	4	0.583	0.00 %
C vs. A	2	0.26	1	0.610	0.00 %
G vs. SC	1	0.00	0	-	-
A vs. SC	2	0.56	1	0.453	0.00 %
H vs. SC	1	0.00	0	-	-
A vs. D	1	0.00	0	-	-
SC vs. C	1	0.00	0	-	-

**** I-squared: the variation in OR attributable to heterogeneity***

S Table E3: Tests of heterogeneity for studies included in the standard pair-wise analyses for Work Absence due to LBP analysis

Treatment comparison	No. of comparisons (by treatment)	Chi-squared statistic	Degrees of freedom	P-value	I^2 (%)**
C vs. SC	8	2.71	7	0.910	0.00%
B vs. SC	1	0.00	0	-	-
G vs. SC	1	0.00	0	-	-
H vs. SC	1	0.00	0	-	-
A vs. SC	2	0.01	1	0.938	0.00%
C vs. A	1	0.00	0	-	-

**** I-squared: the variation in OR attributable to heterogeneity***

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S Appendix F: Egger's test of small-study effects

P-value	Result
0.47	No significant small-study effects
0.95	No significant small-study effects

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S Appendix G: WinBugs Codes

```
model{
for(i in 1:NS){
w[i,1] <-0
    delta[i,t[i,1]]<-0
  mu[i] ~ dnorm(0,.0001)
    for (k in 1:na[i])  {
  r[i,k] ~ dbin(p[i,t[i,k]],n[i,k])
                  logit(p[i,t[i,k]])<-mu[i] + delta[i,t[i,k]]
rhat[i,k] <- p[i,t[i,k]] * n[i,k]
dev[i,k] <- 2*(r[i,k] * (log(r[i,k]/rhat[i,k])) + (n[i,k]-r[i,k]) * (log((n[i,k]-r[i,k])/(n[i,k]-rhat[i,k]))))
                  }
sumdev[i] <- sum(dev[i,1:na[i]])

        for (k in 2:na[i]) {
  delta[i,t[i,k]] ~ dnorm(md[i,t[i,k]],taud[i,t[i,k]])
md[i,t[i,k]] <-  d[t[i,k]] - d[t[i,1]]  + sw[i,k]
taud[i,t[i,k]] <- tau *2*(k-1)/k
   w[i,k] <- (delta[i,t[i,k]]  - d[t[i,k]] + d[t[i,1]])
sw[i,k] <-sum(w[i,1:k-1])/(k-1) }
  }
ssumdev<-sum(sumdev[])
d[1]<-0
for (k in 2:NT){d[k] ~ dnorm(0,.0001) }

sd~dunif(0,2)
tau<-1/pow(sd,2)
tau.squared<- sd*sd
# Rank Probability
for (k in 1:NT)   { logit(T[k])<- mA  +d[k] }
```

```
for (k in 1:NT) { rk[k]<- NT+1 - rank(T[],k)
                    best[k]<-equals(rk[k],1)}
# Pairwise Measurements:
for (c in 1:(NT-1))
        {  for (k in (c+1):NT)
             {  lor[c,k] <- d[k] - d[c]
               log(or[c,k]) <- lor[c,k]
             }
         }
}
```