Supplementary material

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

The Effectiveness of lower body quadrant neuralmobilization in healthy and back pain population.

Supplementary data

Table 1 – Qualitative summary of the included RCTs on healthy populations

Study	Participants Characteristics	Intervention group	Control group	Outcomes
Areeudomwong *et al.* (2016)	N = 40 Age = (18 – 25) Gender = 40 M	- NS technique on the sciatic nerve of the dominant leg in a slump position for 60-seconds and repeated 5 times - 4-week program (3 sessions per week) (N = 20)	- Placebo (pulse shortwave for 10 minutes). The device was turned on without any electrical current being applied - 4-week program (3 sessions per week) (N = 20)	- LLF pre- and post-intervention (one day after the last intervention session) - PKE
Castellote-Caballero *et al.* (2013)	N = 28 Age = 20.8 (SD 1) Gender = 28 M	- NS technique - 1 week period (3 sessions every other day) (N=14)	- No intervention (N=14)	- LLF pre- and post-intervention
Castellote-Caballero *et al.* (2014)	N = 120 Age = 33.4 (SD 7.4) Gender = 60 M	- Passive sciatic NS technique in prone position - 1 session of 3 minutes (N=40)	- Passive hamstrings static stretching in SLR position - 5 reps x 30 s of passive hamstrings static stretching in SLR position (N=40) - Placebo: intrinsic foot joints passive mobilization -3 minutes (N=40)	- LLF pre- and post-intervention
Ganesh (2017)	N = 30 Age = (18 – 25) Gender = 30 M	- NS technique on the sciatic nerve of the dominant leg in supine position - x session(s) (?) of 3 minutes (approximately 25th repetition) (N = 15)	- Suboccipital Muscle Inhibition technique in the supine position - 6 days / week for 2 weeks	- LLF pre- and post-intervention - Passive SLR Test
Méndez-Sánchez *et al.* (2010)	N = 8 Age = 21 (SD 3) Gender = 8 M	- Static bilateral hamstrings stretching during 5 min - Sciatic NM technique - 60 s, for each lower limb (N=4)	- Static bilateral hamstrings stretching during 5 min (N=4)	- LLF pre- and post-intervention
Satkunskiene *et al.* (2020)	N = 22 Age = 21.9 (SD 1.9) Gender = 22 M	- NS technique on the right leg (6 sets of 30 s with a 60 s rest between sets) (N = 11)	- Static Stretching on the right leg (6 sets of 30 s with a 60 s rest between sets) (N = 11)	- LLF pre- and post-intervention - Passive SLR Test
Sharma *et al.* (2016)	N = 60 Age = 22 (SD 2.4) Gender = 33 M	- 3 sessions for one week - 30 s of static hamstrings stretching - 3 progressive sets (10, 15, and 20 reps) of NS exercises, in slump position (N=20) - 3 sessions for one week - 30 s of static hamstrings stretching - 3 progressive sets (10, 15, and 20 reps) of NT exercises, in slump position; (N=20)	- 3 sessions during one week for 30 s - Static hamstrings stretching (N=20)	- LLF pre- and post-intervention - PKE inclinometer
Vinod Babu *et al.* (2015)	N = 80 Age = (18 – 40) Gender = 17 M	- NS technique - 5 sets of 60 s	- MBLR in supine position in 5 progressive greater position of hip flexion	- LLF pre- and post-intervention - Passive SLR Test
Webright *et al.* (1997)	N = 40 Age = 21.3 (SD 3.6) Gender = 22 M	- AKE in slump position - 30 reps. of 2x / day, for 6 weeks (N=11)	- Active control - static hamstrings stretching - 30 s of 2x / day, for 6 weeks (N=15) - Passive control – no intervention (N=14)	- LLF pre- and post-intervention

Legend: AKE – Active Knee Extension; LLF – Lower Limb Flexibility; MBLR – Mulligan Bent Leg Raise; NM – Neural Mobilization; NS – Neural Sliding; NT – Neural Tensioning; PKE – Passive Knee Extension; SLR – Straight Leg Raise

Table 2 – Qualitative summary of the included RCTs on LBP population

Study	Participants Characteristics	NM Intervention	Control group	Outcomes
Cleland *et al.* (2006)	N = 30, NRLBP symptoms for 18.5 weeks (NM group) and 14.5 weeks (control group) Age = 38.7 (SD 11.6) Gender = 9 M, 21 F	- Lumbar vertebrae mobilization and exercise - 5 x 30 s of slump static stretching performed - 2x / week, for 3 weeks	- Lumbar vertebrae mobilization and exercise	- Pain (NRS) - Disability (ODI) pre- and post-intervention
Colakovic *et al.* (2013)	N = 60 with radicular LBP Age = 43.1 (SD 6.4) Gender = 30 M, 30 F	- 3 series of 10 reps. of oscillatory movements combining knee extension, hip flexion, and ankle dorsiflexion, - 3x week, for 4 weeks.	- Active ROM exercises for back and lower limbs, plus lumbar stabilization exercises	- Pain (VAS converted to NRS) pre-and post-intervention
Dwornik *et al.* (2009)	N=87, chronic LBP with neurogenic functional pain referred to the lower extremities Age =43 (SD 10) Gender =34 M, 53 F	- 10 sessions of NM techniques, applied to the trunks of the femoral, sciatic, and tibial nerves - 2-week period	- 10 sessions of standard physiotherapeutic treatment	- Pain (VAS converted to NRS) pre-and post-intervention
Machado & Bigolin (2010)	N=9, LBP symptoms for over a 3-month period Age= 44.2 (SD 8.5) Gender =2 M,7 F	- SLR maneuvers - 3 neural tensioning exercises, during 30 min - 2x /week, for a total of 20 sessions	- Active and passive stretching of all trunk and lower limb muscle groups	- Pain (VAS converted to NRS) - Disability (RMDQ) pre-and post-intervention
Nagrale *et al.* (2012)	N=60, NRLBP symptoms with 15 weeks of duration Age range =18 to 60 Gender=21 M, 39 F	- Lumbar spine mobilization and stabilization exercises - 5x 30s of slump stretching performed - 2x /week, for 3 weeks	- Lumbar spine mobilization and stabilization exercises	- Pain (NRS) - Disability (ODI) pre-and post-intervention
Plaza-Manzano *et al.* (2020)	N=32 with radicular LBP for over a 3-month period Age =46.25 (SD 7.0) Gender=16 M, 16 F	- NM targeting the main trunk of the sciatic nerve of the affected side. (Flexion, adduction, and medial rotation (if possible) of the hip, knee extension, and ankle dorsiflexion) - 3 sets of 10 repetitions on each treatment session for 8 weeks, applied 5 mins before the motor control exercise program. - Motor control exercise program of 30min - 2x/week for 4 weeks - expert recommendations. exercises at home once daily for 20 mins for the 8-week intervention period. (N=16)	- Motor control exercise program of 30min - 2x/week for 4 weeks - expert recommendations. exercises at home once daily for 20 mins for the 8-week intervention period. (N=16)	- Pain (NRS) - Disability (RMDQ) pre-and post-intervention
Tambekar *et al.* (2016)	N=31 with radicular LBP for over a 3-month period Age= 33.15 (Sd 6.6) Gender=16 M, 15 F	- Butler NM - 3 repetitions for 10 seconds (N=15)	- Mulligan - 3 repetition several seconds (N=16)	- Pain (VAS) at the baseline, post intervention and after 24 h (follow up)

F (female); LBP (Low Back Pain); M (male); NM (Neural Mobilization); NRLBP (Non-Radicular Low Back Pain); RS (Numeric Rating Scale); ODI (Oswestry Disability Index); RMDQ (Roland and Morris Disability Questionnaire); SD (standard deviation); VAS (Visual Analogue Scale).

Table 3 – Quantitative Summary for "flexibility"

Studies	Mean difference (Post – pre-intervention)		SD difference		n		Between groups	
	Control	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**	**ES**	**SE**
Areeudomwong *et al.* (2016)	1.417	11.91	2.778	8.051	20	20	1.708	0.371
Razouvohu & Ganesh (2017)	17.066	12.4	3.92	6.86	15	15	0.811	0.380
Satkunskiene *et al.* (2020)	7.0	9.7	3.4	4.7	11	11	0.633	0.437
Vinod Babu (2015)	9.01	9.43	9.01	9.73	40	40	0.302	0.224

Legend: SD = standard deviation; n = number of participants; ES = effect size; SE= standard error.

Table 4 – Quantitative Summary for "pain"

Studies	Mean difference (Post – pre-intervention)		SD difference		n		Between groups	
	Control	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**	**ES**	**SE**
Cleland *et al.* (2006)	1.1	2.3	1.0	8.99	14	16	0.17	0.36
Colakovic *et al.* (2013)	6.7	7.62	1.94	1.33	30	30	0.54	0.26
Dwornik *et al.* (2009)	0.2	1.5	2.02	1.97	45	42	0.64	0.22
Nagrale *et al.* (2012)	2.94	3.3	1.02	0.80	30	30	0.38	0.26
Plaza-Manzzano *et al.* (2020)	2.6	3.4	1.22	1.21	16	16	0.64	0.36
Tambekar *et al.* (2016)	1.31	1.87	0.87	0.74	16	15	0.67	0.37

Legend: SD = standard deviation; n = number of participants; ES = effect size; SE= standard error.

Table 5 – Quantitative Summary for "Disability"

Studies	Mean difference (Post – pre-intervention)		SD difference		n		Between group	
	Control	Intervention	Control	Intervention	Control	Intervention	ES	SE
Plaza-Manzzano *et al.* (2020)								
	4.3	5.6	2.253	1.345	16	16	0.682	0.364

Legenda: SD = standard deviation; n = number of participants; ES = effect size; SE= standard error.

Figure 5: Funnel plot (dependent variable "flexibility") for the evaluation of potential publication bias
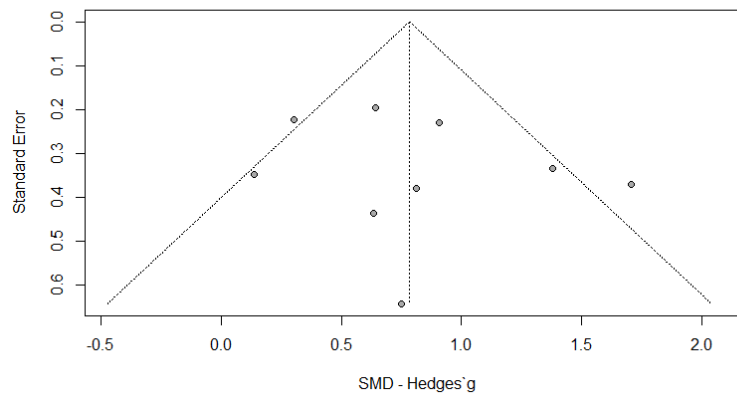

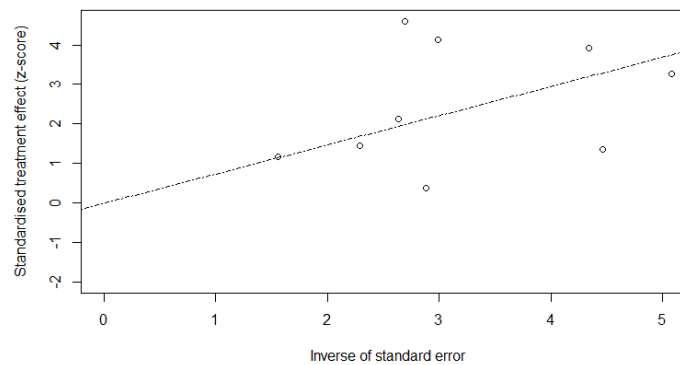Figure 6: Radial plot (dependent variable "flexibility")

Figure 7: Baujat plot (dependent variable "flexibility")