LUMBAR BRACES AND OTHER ASSISTIVE DEVICES FORTHE TREATMENT OF CHRONIC LOW BACK PAIN

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Lumbar supports may slightly reduce short-term pain when added to NSAIDs, but effects on disability are very uncertain.
Overall, evidence is insufficient to support their routine use in CLBP.

BACKGROUND

Lumbar supports (i.e. non-rigid and rigid lumbar braces, belts), and devices to assist mobility and gait are widely used to manage Chronic Low Back Pain (CLBP) in clinical practice, despite limited evidence.

AIM

To evaluate the benefits and harms of assistive technologies in adults with CLBP on pain, disability and health-related quality of life (HRQoL).

METHODS

Systematic review (SR) of RCTs in adults with CLBP comparing assistive technologies with placebo, no intervention, or usual care. The Cochrane Central Register of Controlled Trials, PubMed, Embase, and CINAHL, trial registries and the reference lists of all included studies, and relevant SRs were searched up to 7 January 2025.

OUTCOMES

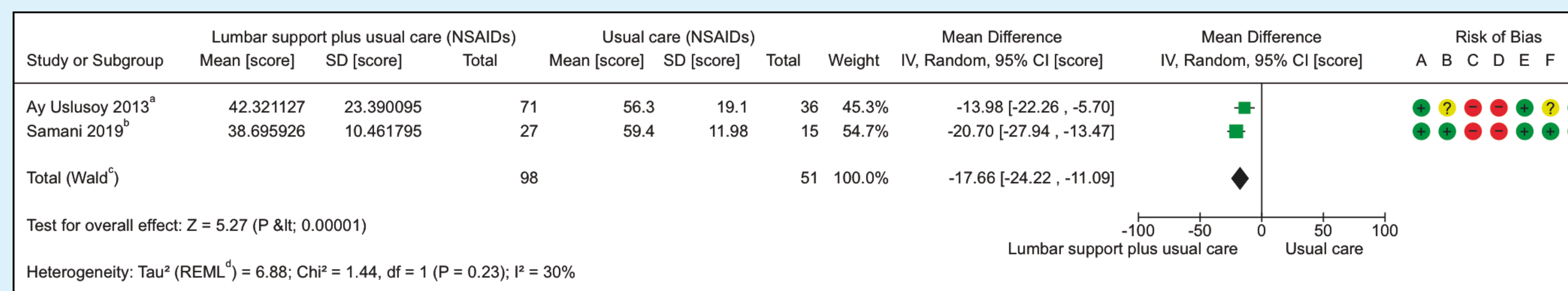
- Outcomes: pain, disability, HRQoL, treatment success, safety (adverse events, withdrawals)
- Risk of bias assessed with Cochrane RoB 1
- Certainty of evidence evaluated using GRADE
- Meta-analysis performed (random-effects model; MD/SMD with 95% CI)
- Narrative synthesis when pooling was not possible

Lumbar supports show little to no clinically meaningful benefit in CLBP, with very uncertain effects on disability.

Lumbar support plus usual care (NSAIDs) compared to Usual care (NSAIDs) in adults with chronic low back pain

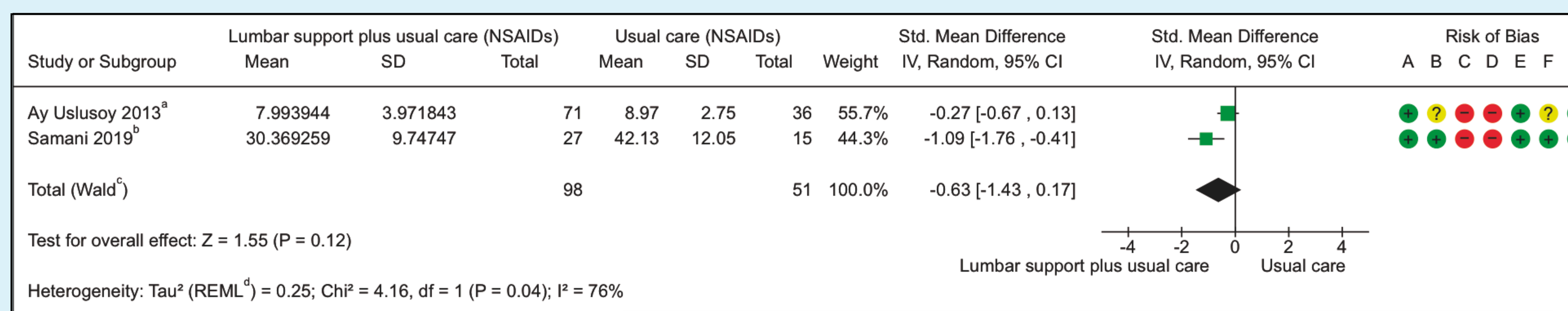
Patient or population: adults with chronic low back pain
Setting: outpatient
Intervention: Lumbar support plus usual care (NSAIDs)
Comparison: Usual care (NSAIDs)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)
	Risk with Usual care (NSAIDs)	Risk with Lumbar support plus usual care (NSAIDs)			
Pain intensity - end of treatment assessed with: Visual Analog Scale and Numerical Rating Scale Scale from: 0 to 100 follow-up: range 3 weeks to 4 weeks	The mean pain intensity - end of treatment was **57.85**	MD **17.66 lower** (24.22 lower to 11.09 lower)	-	149 (2 RCTs)	⊕⊕⊖⊖ Low[a,b]
Disability - end of treatment assessed with: Roland-Morris Disability Questionnaire and Oswestry Disability Index follow-up: range 3 weeks to 4 weeks	-	SMD **0.63 SD lower** (1.43 lower to 0.17 higher)	-	149 (2 RCTs)	⊕⊖⊖⊖ Very low[a,b,c]



Study or Subgroup	Lumbar support plus usual care (NSAIDs) Mean [score]	SD [score]	Total	Usual care (NSAIDs) Mean [score]	SD [score]	Total	Weight	Mean Difference IV, Random, 95% CI [score]	Risk of Bias A B C D E F G
Ay Uslusoy 2013[a]	42.321127	23.390095	71	56.3	19.1	36	45.3%	-13.98 [-22.26 , -5.70]	+ ? − − + ? +
Samani 2019[b]	38.695926	10.461795	27	59.4	11.98	15	54.7%	-20.70 [-27.94 , -13.47]	+ + − − + + +
Total (Wald[c])			98			51	100.0%	-17.66 [-24.22 , -11.09]	

Test for overall effect: Z = 5.27 (P < 0.00001)
Heterogeneity: Tau² (REML[d]) = 6.88; Chi² = 1.44, df = 1 (P = 0.23); I² = 30%



Study or Subgroup	Lumbar support plus usual care (NSAIDs) Mean	SD	Total	Usual care (NSAIDs) Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E F G
Ay Uslusoy 2013[a]	7.993944	3.971843	71	8.97	2.75	36	55.7%	-0.27 [-0.67 , 0.13]	+ ? − − + ? +
Samani 2019[b]	30.369259	9.74747	27	42.13	12.05	15	44.3%	-1.09 [-1.76 , -0.41]	+ + − − + + +
Total (Wald[c])			98			51	100.0%	-0.63 [-1.43 , 0.17]	

Test for overall effect: Z = 1.55 (P = 0.12)
Heterogeneity: Tau² (REML[d]) = 0.25; Chi² = 4.16, df = 1 (P = 0.04); I² = 76%

Footnotes
[a]Extension-controlled lumbar support plus usual care (naproxen sodium) and elastic lumbar support plus usual care (naproxen sodium) groups combined
[b]High pressure plus usual care (NSAIDs) and normal pressure plus usual care (NSAIDs) groups combined.
[c]CI calculated by Wald-type method.
[d]Tau² calculated by Restricted Maximum-Likelihood method.

Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Current evidence does not support a clinically meaningful role for lumbar supports in CLBP management.

EQUITY IMPLICATIONS

- Use of lumbar supports may vary across healthcare and resource settings (access, cost, availability of alternatives)
- Most evidence comes from LMICs, which may limit applicability to other contexts
- Differences in healthcare systems and rehabilitation access may influence use and perceived benefit
- Future research should target underserved populations and resource-constrained settings.
- Evidence is also lacking for other assistive devices (e.g. walking aids, wheelchairs), highlighting key equity-related gaps.

RESULTS

8 RCTs (n=501), 5 conducted in LMICs (Low- and Middle-Income Countries) and 3 in HICs (High-Income Countries)

Short term evidence:

- very uncertain about the effect of lumbar support plus usual care (education and exercise) compared with usual care (education and exercise) on pain intensity (MD=-4.50; 95% CI -20.98 to 11.98), disability (MD=2.80; 95% CI -21.58 to 27.18) and HR QoL
- uncertain about the effect of lumbar support plus usual care (routine physical therapy) compared with usual care (routine physical therapy) on pain intensity (MD=3.10; 95% CI -5.89 to 12.09) and disability (MD=-4.27; 95% CI -7.71 to -0.83)
- lumbar support plus usual care (NSAIDs) compared with usual care may result in little to no difference in pain intensity (MD=-17.66; 95% CI -24.22 to -11.09; 2 trials; n=149; I^2=30%; low-certainty evidence) but its effect on disability is very uncertain (SMD=-0.63; 95% CI -1.43 to 0.17; 2 trials; n=149; I^2=76%; very low-certainty evidence).

Intermediate term evidence

lumbar support compared with no intervention results in little to no difference in pain intensity (MD=-8.00; 95% CI -15.02 to -0.98; one trial; 107 participants; I^2=NA; low-certainty evidence) and disability (MD=-0.10; 95% CI -1.11 to 0.91; one trial; 107 participants; I^2=NA; low-certainty evidence)

CLINICAL SIGNIFICANCE

Evidence is insufficient to support the routine use of lumbar supports in CLBP, and their potential harms remain unclear.
Most studies were conducted in LMICs, which may raise equity considerations and limit applicability across settings.

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This abstract is based on a draft version of a Cochrane Review after second peer review. Upon completion and approval, the final version is expected to be published in the Cochrane Database of Systematic Reviews (www.cochranelibrary.com).

Stefano Negrini own stock of ISICO.
All other authors have no conflicts of interests to declare.