Session I

어떻게 치료하나?

김 충 효
강원의대

Nonsurgical Treatment of spinal stenosis
Evidence based recommendations

- 약물치료
- Physical therapy
- Pelvic traction
- Therapeutic Exercise
- Acupuncture ?
- 신경차단과 주사
  (척추학, The spine)


Spine
LITERATURE REVIEW
Nonoperative Treatment of Lumbar Spinal Stenosis With Neurogenic Claudication
A Systematic Review
Research Report
Physical Therapy Interventions for Degenerative Lumbar Spinal Stenosis: A Systematic Review
ELSEVIER
Acupuncture for lumbar spinal stenosis: A systematic review and meta-analysis

Nonsurgical Treatment of spinal stenosis
Ammendolia 2012

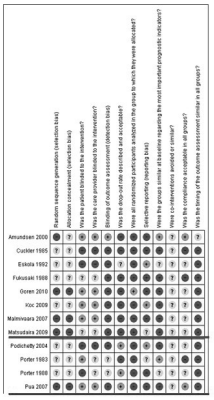
- **Inclusion criteria**
  1. **Clinical symptoms**: back pain radiation to lower limbs or buttocks; fatigue or loss of sensation in the lower limbs aggravated by walking. Persistent pain without progressive neurologic dysfunction. Duration of symptoms and signs for **more than 6 months**.
  2. Imaging techniques: spinal canal narrowing, the sagittal diameter of the dural sac being **less than 10 mm** or cross-sectional dural area being less than 75 mm
  3. Clinical signs and symptoms corresponding to segmental radiographic level of stenosis.
- **Result**
  - **Low quality evidence** that **prostaglandins**, and very low quality evidence that gabapentin or methylcobalamin, improves walking distance.
  - **Low** and very low quality evidence that **physical therapy** was no better in improving walking ability compared to no treatment, oral diclofenac plus home exercises, or combined manual therapy and exercise.
  - Very low quality evidence that **epidural injections** improve walking distance up to 2 weeks compared to placebo.
  - **Low-** and very low-quality evidence that various **direct decompression** surgical techniques show similar significant improvements
- **Conclusion**
  - Moderate and high-quality evidence for nonoperative treatment is lacking and thus **prohibits recommendations for guiding clinical practice**.

Nonsurgical Treatment of spinal stenosis
Ammendolia 2012

Four studies with low risk of bias

Fulfilled six or more of the 12 criteria, including clearly described and appropriate randomization and allocation concealment, and with no severe flaws.

1. **Matsudaira The efficacy of prostaglandin E1 derivative** in patients with lumbar spinal stenosis. *Spine* 2009
2. **Goren** Efficacy of **exercise and ultrasound** in patients with lumbar spinal stenosis: a prospective randomized controlled trial. *Clinical Rehabilitation* 2010.
3. **Pua Treadmill walking with body weight support** is no more effective than cycling when added to an exercise program for lumbar spinal stenosis: a randomised controlled trial. *Australian Journal Physiotherapy* 2007
4. **Malmivaara Surgical or non-operative treatment** for lumbar spinal stenosis? A randomized controlled trial. *Spine* 2007



Limaprost vs etodolac
Matsudaira 2009

- Randomized, open-label, active-controlled trial was conducted at 4 study sites in Japan
- Inclusion criteria
  - age between 50 and 85 years; presence of both NIC and cauda equina symptoms (at least presence of bilateral numbness in the lower limbs)
  - MRI-confirmed central stenosis with acquired degenerative LSS.
- These outcomes were measured at baseline and then at **week 8** after administration

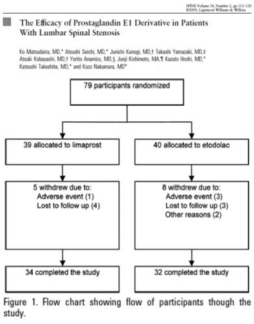

The Efficacy of Prostaglandin E1 Derivative in Patients With Lumbar Spinal Stenosis
79 participants randomized
39 allocated to limaprost
40 allocated to etodolac
5 withdrew due to: Adverse event (1) Lost to follow up (4)
8 withdrew due to: Adverse event (3) Lost to follow up (3) Other reasons (2)
34 completed the study
32 completed the study

Figure 1. Flow chart showing flow of participants though the study.

Limaprost vs etodolac
Matsudaira 2009

- Satisfaction and improving QOL
  - Limaprost was shown superior to etodolac (NSAIDs), not only in terms of quality of life (MOS 36-item SF-36), the primary endpoint, but also in terms of walking distance and patients' subjective assessment of improvement and satisfaction(Genevay 2010)

Table 2. Primary Efficacy Outcomes: SF-36 Subscale Scores

SF-36 Subscales	Limaprost Group (n = 34) Baseline	Limaprost Group (n = 34) Wk 8	Etodolac Group (n = 32) Baseline	Etodolac Group (n = 32) Wk 8	Limaprost Group Change From Baseline	Etodolac Group Change From Baseline	P*
Physical functioning	56.9 ± 28.0	67.8 ± 19.1	55.7 ± 21.1	57.3 ± 22.4	11.0 ± 14.6	1.6 ± 14.9	0.01
Role physical	61.8 ± 26.6	73.5 ± 24.5	62.9 ± 24.3	60.4 ± 32.7	11.2 ± 22.0	−2.5 ± 27.0	0.03
Bodily pain	42.3 ± 15.0	56.0 ± 19.7	47.0 ± 18.3	45.2 ± 16.3	13.7 ± 20.6	−1.8 ± 12.1	<0.01
General health	53.5 ± 17.5	57.8 ± 17.5	56.7 ± 17.7	56.4 ± 17.1	4.3 ± 11.2	−2.3 ± 18.1	0.08
Vitality	57.5 ± 23.1	64.7 ± 19.2	64.8 ± 23.4	60.7 ± 24.2	7.2 ± 19.9	−4.1 ± 17.4	0.02
Social functioning	70.2 ± 25.9	79.8 ± 25.7	69.1 ± 22.9	70.7 ± 23.2	9.6 ± 24.0	1.6 ± 22.6	0.17
Role emotional	68.1 ± 27.0	75.7 ± 20.9	65.6 ± 22.4	63.0 ± 31.0	7.6 ± 19.3	−2.6 ± 25.7	0.07
Mental health	66.3 ± 20.6	73.7 ± 17.2	71.1 ± 23.3	65.8 ± 23.0	6.9 ± 16.0	−5.3 ± 16.6	<0.01

Table 6. Secondary Efficacy Outcomes: Patient's Subjective Improvement and Satisfaction

Outcome	Subjective Rating	Limaprost Group (n = 34) n (%)	Etodolac Group (n = 32) n (%)	P*
Patient's subjective improvement	Improved	11 (32.4)	0 (0)	<0.01
	Slightly improved	14 (41.2)	6 (18.8)	
	Unchanged	8 (23.5)	19 (59.4)	
	Became worse	1 (2.9)	7 (21.9)	
Patient's subjective Satisfaction	Satisfied	14 (41.2)	1 (3.1)	<0.01
	Slightly satisfied	17 (50.0)	13 (40.6)	
	Slightly dissatisfied	2 (5.9)	16 (50.0)	
	Dissatisfied	1 (2.9)	2 (6.3)	

Values are n (%).
*The Cochran-Mantel-Haenszel test.

Table 5. Secondary Efficacy Outcomes: Neurogenic Intermittent Claudication (NIC) Distance

Distance	Limaprost Group (n = 34) Baseline	Limaprost Group (n = 34) Wk 8	Etodolac Group (n = 32) Baseline	Etodolac Group (n = 32) Wk 8	P*
≥1000m	2	9	5	4	<0.01
≥500m	12	9	8	7	
≥100m	11	10	11	9	
<100m	8	6	8	12	
A few gait	1	0	0	0	

*The Cochran-Mantel-Haenszel test, adjusting for baseline value.

Limaprost vs etodolac
Matsudaira 2009

- LBP and claudication
  - **A trend towards less leg pain** but **no difference in back pain** was observed in the limaprost group
- Adverse event
  - 1 participant: **hot flashes /flushing and anorexia** a few days after administration
  - 2 : stomach discomfort at the start of administration and 4 weeks after administration

Table 4. Secondary Efficacy Outcomes: Low Back Pain, Leg Pain, and Leg Numbness

Outcome	Severity	Limaprost Group (n = 34) Baseline	Limaprost Group (n = 34) Wk 8	Etodolac Group (n = 32) Baseline	Etodolac Group (n = 32) Wk 8	P*
Low back pain	None	6	7	4	7	0.77
	Slight	1	8	5	5	
	Mild	8	9	6	6	
	Moderate	16	7	11	9	
	Strong	3	2	4	3	
	Severe	0	1	2	2	
Leg pain	None	2	2	4	2	0.08
	Slight	2	4	0	4	
	Mild	1	15	5	6	
	Moderate	19	8	13	11	
	Strong	9	4	7	7	
	Severe	1	1	3	2	
Leg numbness	None	0	3	0	0	<0.01
	Slight	3	8	0	1	
	Mild	5	10	4	2	
	Moderate	15	9	14	17	
	Strong	7	3	13	9	
	Severe	4	1	1	3	

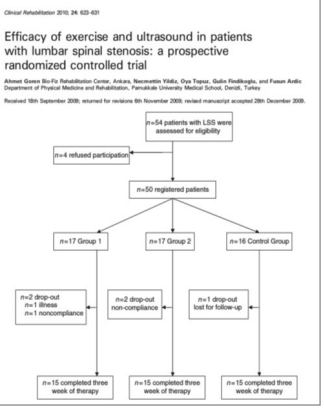
Values are n.
*The Cochran-Mantel-Haenszel test, adjusting for baseline value.

Other Medical treatment
(The spine)

- Acetaminophen
  - Initial medication is recommended, S/E: liver toxicity
- NSAIDS
  - S/E: Short term: GI problem, Long term: Renal problem
  - S/E: COX-2 inhibitor: cardiac
- Narcotics or muscle relaxant
  - only short term use
  - S/E: Fall-activity restriction
- Amitriptyline/imipramine
  - Anticholinergic S/E: cardio, orthostatic hypotension, confusion, weight gain, dry mouth, urinary retention, constipation
- Gabapentin
  - S/E: Dizziness, fatigue, drowsiness, ataxia, peripheral edema, tremor
    Sexual dysfunction, toxicity in renal impairment

Efficacy of exercise and ultrasound
Goren 2010

- Participants were randomized to the ultrasound plus exercise group(group 1, n=17), sham ultrasound plus exercise group (group 2, n=17) or no treatment/no exercise group (control, n=16)
- Stretching and strengthening exercises for lumbar, abdominal, leg muscles as well as low-intensity cycling exercises were given as therapeutic exercises.
- Ultrasound was applied with 1 mHz, 1.5W/cm2 intensity, in continuous mode on the back muscle for 10 minutes in group 1 while ultrasound on/off mode was applied in group 2.



Efficacy of exercise and ultrasound
Goren 2010

- A statistically significant improvement is found in all of the post-treatment parameters in group 1 and group 2, except for the leg pain parameter in group 1.
- leg pain score and Oswestry Disability Index score were significantly lower in both treatment groups at the end of the treatment compared with the control group.
- In addition, it was detected that the consumption of analgesics in group 1 was statistically lower than that in the control group

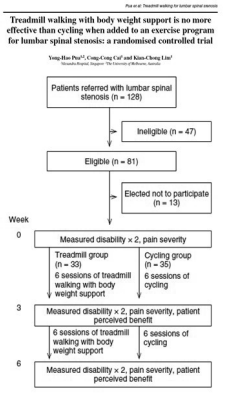
Table 3 Comparison of clinical characteristics of patients in groups

	Group I (n = 19) (mean ± SD)	Group II (n = 16) (mean ± SD)	Control (n = 19) (mean ± SD)	P-value*	Mann–Whitney U-test with Bonferroni correction
Pain – visual analogue scale					
Back pain					
Pre-treat	5.53 ± 1.96	6.20 ± 2.60	5.26 ± 3.36	0.605	
Post-treat	3.33 ± 2.79	4.26 ± 3.26	5.66 ± 2.90	0.104	
Change	−2.20 ± 2.83 P = 0.015	−1.94 ± 2.86 P = 0.018	0.40 ± 1.68 P = 0.280		
Leg pain					
Pre-treat	5.80 ± 2.90	6.33 ± 3.33	6.60 ± 2.80	0.584	
Post-treat	4.33 ± 2.99	3.86 ± 3.02	7.13 ± 3.04	0.006*	Group 1>Control, P = 0.007 Group 2>Control, P = 0.006
Change	−1.47 ± 3.02 P = 0.074	−2.47 ± 3.75 P = 0.027	0.53 ± 1.59 P = 0.194		
Disability – Oswestry Disability Index					
Pre-treat	25.46 ± 7.70	26.90 ± 10.19	32.20 ± 9.60	0.090	
Post-treat	21.50 ± 9.30	19.10 ± 8.00	28.60 ± 9.20	0.024*	Group 1>Control, P = 0.014 Group 2>Control, P = 0.011
Change	−3.94 ± 7.20 P = 0.041	−7.80 ± 10.26 P = 0.012	−3.60 ± 11.66 P = 0.366		
Functional capacity – treadmill test					
Total ambulation time (s)					
Pre-treat	545.60 ± 356.10	421.86 ± 364.30	412.10 ± 359.20	0.479	
Post-treat	639.90 ± 640.70	536.80 ± 368.40	346.00 ± 313.40	0.069	
Change	94.30 ± 173.96 P = 0.036	114.94 ± 212.40 P = 0.022	−66.10 ± 158.57 P = 0.182		
Time to the first symptoms (s)					
Pre-treat	106.53 ± 90.40	109.70 ± 96.80	99.80 ± 91.95	0.946	
Post-treat	212.20 ± 211.75	241.40 ± 196.90	183.10 ± 284.00	0.097	
Change	104.33 ± 188.09 P = 0.005	131.70 ± 163.71 P = 0.005	83.30 ± 352.58 P = 0.807		
Using analgesic – paracetamol tablet					
Post-treat	8.33 ± 15.10	16.00 ± 22.47	30.60 ± 27.75	0.045*	Group 1>Control, P = 0.016

SD, standard deviation.
*Kruskal–Wallis test. $p < 0.05$ is statistically significant.
Pre-treat, pre-treatment score. Group 1: ultrasound + exercise.
Post-treat, post-treatment score. Group 2: sham ultrasound + exercise.

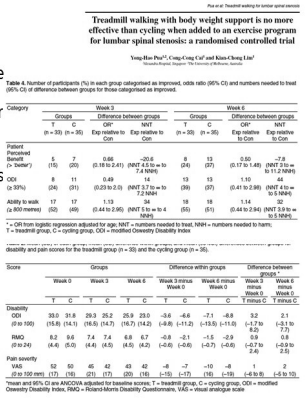
Treadmill walking with body weight support vs cycling
Pua 2009

- RCT was conducted at the physiotherapy outpatient clinic of a large tertiary institution in Singapore
- Participants in both groups received intervention twice a week for the next 6 weeks, for a total of 12 sessions.
- Drop out
  - Twelve participants (18%) did not complete the Week 3 measurements.
  - Twenty-one participants (29%) did not complete the Week 6 measurements.
  - There were 25 participants in all (37%) who did not attend on at least one measurement occasion.



Treadmill walking with body weight support vs cycling Pua 2009

- No difference between groups in the overall reduction in disability. When the groups were combined, they reduced their disability on both measures over time ($p < 0.001$).
- At 3 weeks, the treadmill group perceived a benefit two thirds as often as the cycling group; and at 6 weeks, half as often as the cycling group
- The number needed to treat for participants in the treadmill group to perceive a benefit greater than that perceived by the cycling group was –21 at 3 weeks and –8 at 6 weeks



Treadmill walking with body weight support is no more effective than cycling when added to an exercise program for lumbar spinal stenosis: a randomised controlled trial

Yong-Hao Pua[1,2], Cong-Cong Cai[3] and Kian-Chong Lim[3]

Table 4. Number of participants (%) in each group categorised as improved, odds ratio (95% CI) and numbers needed to treat (95% CI) of difference between groups for those categorised as improved.

Category	Week 3				Week 6			
	Groups		Difference between groups		Groups		Difference between groups	
	T (n = 33)	C (n = 35)	OR* Exp relative to Con	NNT Exp relative to Con	T (n = 33)	C (n = 35)	OR* Exp relative to Con	NNT Exp relative to Con
Patient Perceived Benefit (≥ 'better')	5 (15)	7 (20)	0.66 (0.18 to 2.41)	−20.6 (NNT 4.5 to ∞ to 7.4 NNH)	8 (24)	13 (37)	0.50 (0.17 to 1.48)	−7.8 (NNT 3 to ∞ to 11.2 NNH)
ODI (≥ 33%)	8 (24)	11 (31)	0.49 (0.23 to 2.3)	14 (NNT 3.7 to ∞ to 7.2 NNH	13 (39)	13 (37)	1.10 (0.41 to 2.98)	44 (NNT 4 to ∞ to 5 NNH)
Ability to walk (≥ 800 metres)	17 (52)	17 (49)	1.13 (0.44 to 2.95)	34 (NNT 5 to ∞ to 4 NNH)	18 (55)	18 (51)	1.14 (0.44 to 2.94)	32 (NNT 3.9 to ∞ to 5 NNH)

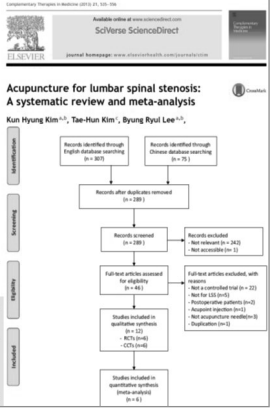
* = OR from logistic regression adjusted for age; NNT = numbers needed to treat, NNH = numbers needed to harm; T = treadmill group, C = cycling group, ODI = modified Oswestry Disability Index

Score	Groups				Difference within groups				Difference between groups *	
	Week 0		Week 3		Week 6		Week 3 minus Week 0		Week 6 minus Week 0		Week 3 minus Week 0	Week 6 minus Week 0
	T	C	T	C	T	C	T	C	T	C	T minus C	T minus C
Disability ODI (0 to 100)	30.0 (15.8)	31.8 (14.1)	29.3 (16.5)	25.2 (14.7)	25.9 (16.7)	23.0 (14.2)	−3.6 (−8.8)	−6.6 (−11.2)	−7.1 (−13.5)	−8.8 (−11.0)	3.2 (−1.7 to 8.2)	2.1 (−3.1 to 7.7)
RMQ (0 to 24)	8.2 (4.4)	9.6 (5.0)	7.4 (4.4)	7.4 (4.5)	6.8 (4.5)	6.7 (4.2)	−0.8 (−2.6)	−2.1 (−2.6)	−1.5 (−2.7)	−2.9 (−2.6)	0.9 (−0.7 to 2.4)	0.8 (−0.9 to 2.5)
Pain severity VAS (0 to 100 mm)	52 (17)	50 (16)	45 (21)	42 (17)	43 (20)	42 (16)	−8 (−15)	−7 (−17)	−10 (16)	−8 (−19)	1 (−6 to 8)	2 (−5 to 10)

*Mean and 95% CI are ANCOVA adjusted for baseline scores; T = treadmill group, C = cycling group; ODI = modified Oswestry Disability Index, RMQ = Roland-Morris Disability Questionnaire, VAS = visual analogue scale

Acupuncture for lumbar spinal stenosis:
Kim 2013

- All RCTs had generally high or uncertain risk of bias
  - No studies reported whether allocation concealment was attempted.
  - All studies had high risk of performance bias due to the unblinded nature of open comparison and did not report whether the outcome assessors were blinded.
  - Four RCTs did not mention whether dropout or loss of follow-up occurred during the study
  - No studies provided information about any discrepancy between the original trial protocol and the reported results or trial registration number.
- No placebo or sham-controlled RCTs or RCTs comparing acupuncture with conventional non-surgical or surgical treatments were found.



Acupuncture for lumbar spinal stenosis: A systematic review and meta-analysis

Kun Hyung Kim[a,b], Tae-Hun Kim[c], Byung Ryul Lee[a,b],

Table 4 Risk of bias of included RCTs.

Study	Random sequence generation	Allocation concealment	Participant blinding	Assessor blinding	Incomplete outcome data	Selective outcome reporting	Other sources of bias
Chen (2009)[18]	Low	Unclear	High	Unclear	Low	Unclear	Low
Ji (2010)[19]	Low	Unclear	High	Unclear	Unclear	Unclear	Low
Kou (2011)[20]	Low	Unclear	High	Unclear	Unclear	Unclear	Low
Lu (2012)[21]	Low	Unclear	High	Unclear	Unclear	Unclear	Low
Chen (2011)[22]	Unclear	Unclear	High	Unclear	Unclear	Unclear	Low
Li (2012)[23]	Low	Unclear	High	Unclear	Unclear	Unclear	Low

Domains of risk of bias assessment were based on Cochrane risk of bias assessment.[12] RCT, Randomised controlled trial; Low, low risk of

Acupuncture for lumbar spinal stenosis:
Kim 2013

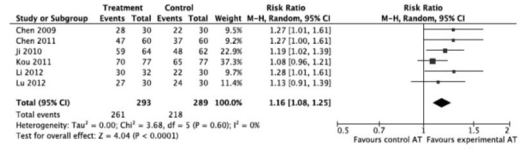
Table 2 Summary characteristics of included RCTs.

First author (year)	Sample size	Interventions	Outcomes (follow-up periods)	Comments
Chen (2009)[18]	(1) 60 (30/30)	Electroacupuncture plus bloodletting therapy versus electroacupuncture alone. Once daily for 20 days	Response rate (post-treatment)	Significantly favored combined treatments
Ji (2011)[19]	(1) 126 (64/62)	Manual acupuncture plus oral herbal decoction versus manual acupuncture alone. Once daily for 10 days	(1) Response rate (post-treatment) (2) Average lumbar assessment scores (post-treatment)	Both outcomes significantly favored combined treatments
Kou (2011)[20]	(1) 154 (77/77)	Manual acupuncture with warm-dredging techniques versus manual acupuncture with simple insertion. Once daily for 20 days	(1) Response rate (post-treatment) (2) Pain VAS for back and leg (up to 6 months) (3) Overall assessment scores (up to 6 months) (4) Spinal function scores (up to 6 months) (5) Quality of life scores (up to 6 months)	All outcomes other than response rate significantly favored augmented acupuncture with warm-dredging techniques
Lu (2012)[21]	(1) 60 (30/30)	Manual acupuncture with warm-promoting techniques versus manual acupuncture with simple insertion. Once daily for 20 days	(1) Response rate (2) Overall assessment scores (up to 6 months) (3) Spinal function scores (up to 6 months) (4) Quality of life scores (up to 6 months)	All outcomes significantly favored augmented acupuncture other than response rate, overall assessment scores at post-treatment, and spinal function scores at 6-month follow up
Chen (2011)[22]	(1) 120 (30/30/30/30)	Manual or Electroacupuncture including BL32 stimulation versus those without BL 32 stimulation. Once daily for 30 days	(1) Response rate (post-treatment) (2) Overall assessment scores (post-treatment)	All outcomes significantly favored acupuncture with BL32 stimulation
Li (2012)[23]	(1) 62 (32/30)	Manual acupuncture with thick silver needle insertion on BL32 plus warm-needle insertion versus warm-needle techniques alone. Twice a week for 5 weeks	(1) Response rate (post-treatment) (2) Spinal function scores (post-treatment)	All outcomes significantly favored silver needle inserton on BL32

RCT, Randomised controlled trial; VAS, visual analogue scale.

Acupuncture for lumbar spinal stenosis:
Kim 2013

- Current evidence for the use of acupuncture in patients with LSS is limited, due to the scarcity of existing clinical trials and high risk of bias in various aspects, which impedes the reliability of the trials'
  - The number of improved patients was significantly higher for acupuncture combined with related therapies or acupuncture with additional stimulation than for acupuncture alone or acupuncture with simple stimulation based on a posttreatment assessment
- None of the included studies provided reports on adverse events.



Study or Subgroup	Treatment Events	Total	Control Events	Total	Weight	Risk Ratio M–H, Random, 95% CI
Chen 2009	28	30	22	30	9.5%	1.27 [1.01, 1.61]
Chen 2011	47	60	37	60	9.2%	1.27 [1.00, 1.61]
Ji 2010	59	64	48	62	22.0%	1.19 [1.02, 1.39]
Kou 2011	70	77	65	77	37.3%	1.08 [0.96, 1.21]
Li 2012	30	32	22	30	9.7%	1.28 [1.01, 1.61]
Lu 2012	27	30	24	30	11.4%	1.13 [0.91, 1.39]
Total (95% CI)		**293**		**289**	**100.0%**	**1.16 [1.08, 1.25]**
Total events	261		218			

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 3.68$, $df = 5$ ($P = 0.60$); $I^2 = 0\%$
Test for overall effect: $Z = 4.04$ ($P < 0.0001$)

Risk Ratio M–H, Random, 95% CI
0.5 0.7 1 1.5 2
Favours control AT Favours experimental AT

Figure 2 The number of improved patients based on post-treatment assessment. In a study by Chen (2011)[22], four groups of acupuncture stimulation techniques were merged into two for pairwise comparison between the techniques with BL32 stimulation and the methods without this stimulation.

Efficacy of acupuncture for degenerative lumbar spinal stenosis: protocol for a randomised sham acupuncture controlled trial Zongshi 2016

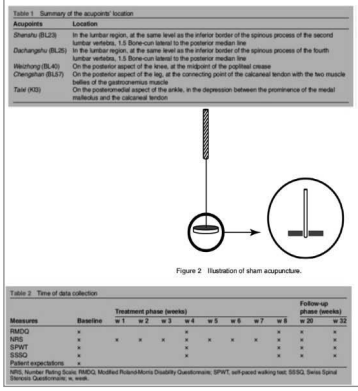


Table 1 Summary of the acupoints' location

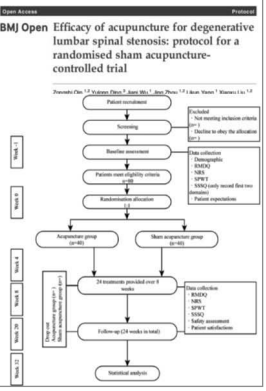
Acupoints	Location
Shenshu (BL23)	In the lumbar region, at the same level as the inferior border of the spinous process of the second lumbar vertebra, 1.5 Bone-cun lateral to the posterior median line
Dachangshu (BL25)	In the lumbar region, at the same level as the inferior border of the spinous process of the fourth lumbar vertebra, 1.5 Bone-cun lateral to the posterior median line
Weizhong (BL40)	On the posterior aspect of the knee, at the midpoint of the popliteal crease
Chengshan (BL57)	On the posterior aspect of the leg, at the connecting point of the calcaneal tendon with the two muscle bellies of the gastrocnemius muscle
Taixi (KI3)	On the posteromedial aspect of the ankle, in the depression between the prominence of the medial malleolus and the calcaneal tendon

Figure 2 Illustration of sham acupuncture.

Table 2 Time of data collection

Measures	Baseline	Treatment phase (weeks) w 1	w 2	w 3	w 4	w 5	w 6	w 7	w 8	Follow-up phase (weeks) w 20	w 32
RMDQ	×				×				×	×	×
NRS	×	×	×	×	×	×	×	×	×	×	×
SPWT	×				×				×	×	×
SSIQ	×				×				×	×	×
Patient expectations	×										

NRS, Number Rating Scale; RMDQ, Modified Roland-Morris Disability Questionnaire; SPWT, self-paced walking test; SSIQ, Swiss Spinal Stenosis Questionnaire; w, week.



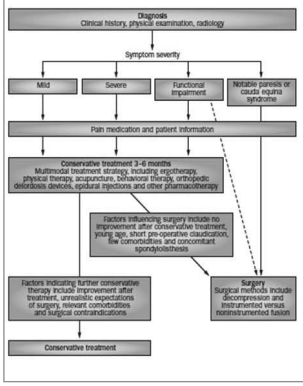
BMJ Open Efficacy of acupuncture for degenerative lumbar spinal stenosis: protocol for a randomised sham acupuncture-controlled trial

Surgical treatment vs nonsurgical treatment

- **Malmivaara** Surgical or non-operative treatment for lumbar spinal stenosis? A randomized controlled trial. Spine 32 2007
  - Although patients improved over the 2-year follow-up regardless of initial treatment, those undergoing decompressive surgery reported greater improvement regarding leg pain, back pain, and overall disability.
  - The relative benefit of initial surgical treatment diminished over time, but outcomes of surgery remained favorable at 2 years
- **Zaina** Surgical versus nonsurgical Treatment for Lumbar Spinal Stenosis spine 41 2016
  - We cannot conclude on the basis of this review whether surgical or nonsurgical treatment is better for individuals with LSS.
  - Nevertheless, we can report on the high rate of effects reported in three of five surgical groups, ranging from 10% to 24%. No side effects were reported for any of the conservative treatment options

요추관 협착증 어떻게 치료해야 하나?

Siebert 2009



▪ **척추수술 심사기준** (고시 제2009-180호, 2009.10.1)

(고시 제 2012-39호, 2012.3.27)

o 척추유합술시 사용하는 고정기기의 인정기준

고정기기 (Cagr 단독사용 등)를 이용한 척추유합술은 적절한 보존적요법에도 불구하고 임상증상의 호전이 없는 다음의 경우에 인정함

- 다 음 -

가. 적응증

(1) 척추전방전위증

(2) 임상증상이 동반된 중등도(MRI상 신경공의 perineural fat의 소실이 확인된 경우)이상의 추간공협착증

(3) 광범위한 후방감압술(편측 후관절의 전절제 및 양측 후관절의 각 1/2 이상 절제)이 불가피한 다음의 질환

① 척추관협착증

② 관혈적 수술후 재발한 추간판탈출증

(4) **3개월 이상의 적절한 보존적 요법**에도 불구하고 심한 요통이 지속되는 퇴행성 추간판질환 중

①MRI상 퇴행성 변화가 1-2개 분절에만 국한되어 있으며, 뚜렷한 추간 간격 협소가 동반되고 추간판조영술(discography)상 병변이 확인된 경우

②분절간 불안정성이 확인된 경우

Take home message

요추관 협착증 어떻게 치료해야 하나?

- **From three studies with low risk of bias**
  1. **Limaprost vs etodolac** Matsudaira 2009
     - Superior to etodolac, in terms of quality of life and walking distance
     - **A trend towards less leg pain** but **no difference in back pain**
  2. **Efficacy of exercise and ultrasound vs exercise** Goren 2010
     - Exercise improved QOL, LBP
     - US effect? no significant improvement of leg pain, reduced analgesics consumption
  3. **Treadmill walking with body weight support vs cycling**
     - Exercise reduced their disability on both measures over time.
     - No difference between groups in the overall reduction in disability.
- **Acupuncture**
  - Current evidence for the use of acupuncture in patients with LSS is limited