

Evidence Table 1. Characteristics of Included Systematic Reviews

Author	Number of Trials	Number of Patients	Years of Review	Study Designs Included ¹					Types of Analysis ²			Outcome Measures ³		
				RCT	CCT	PC	RC	CS	MA (re)	MA (fe)	Individual	Patient Oriented	Surrogates of Interest	Other Surrogates
Brouwer, et al. 2008	4	444	1966 - 2002	●	●						●	●		●
Laupattarakasem, et al. 2008	3	288	1900 - 2006	●	●						●	●		
Warden, et al. 2008	3	119	1980-2006	●					●			●		
Bjordal, et al. 2007	6	221	1980 - 2003	●					○	○		●		
Bellamy, et al. 2006	13	669	1958 - 2003	●						●	●	●	●	●
Roddy, et al. 2005	9	2004	1966 - 2003	●						●		●		
Arroll, et al. 2004	10	NR	1958 - 2003	●					○	●	●	●		

● = Yes ; ○ = Reported (could not verify) ; NR = Not Reported

1. RCT = Randomized Controlled Trial; CCT = Clinical Controlled Trial; PC = Prospective Comparative Study; RC = Retrospective Comparative Study; CS = Case Series

2. MA (re) = Random Effects Meta-Analysis; MA (fe) = Fixed Effects Meta-Analysis; Individual = Reports results of individual studies

3. Surrogates of Interest: Range of Motion (knee), Extension and Flexion (knee), Quadriceps Strength

Evidence Table 2. Systematic Reviews Included using AMSTAR

<u>Author</u>	<u>Title</u>
Brouwer, et al. 2008	Braces and orthoses for treating osteoarthritis of the knee
Laupattarakasem, et al. 2008	Arthroscopic debridement for knee osteoarthritis
Warden, et al. 2008	Patellar taping and bracing for the treatment of chronic knee pain: a systematic review and meta-analysis.
Bjordal, et al. 2007	Short-term efficacy of pharmacotherapeutic interventions in osteoarthritic knee pain: A meta-analysis of randomised placebo-controlled trials
Bellamy, et al. 2006	Intraarticular corticosteroid for treatment of osteoarthritis of the knee
Roddy, et al. 2005	Aerobic walking or strengthening exercise for osteoarthritis of the knee? A systematic review
Arroll, et al. 2004	Corticosteroid injections for osteoarthritis of the knee: meta-analysis

Evidence Table 3. Systematic Reviews Excluded using AMSTAR

<u>Author</u>	<u>Title</u>
Siparsky, et al. 2007	Arthroscopic treatment of osteoarthritis of the knee: are there any evidence-based indications?
Reilly, et al. 2006	A systematic review of lateral wedge orthotics--how useful are they in the management of medial compartment osteoarthritis?
Vignon, et al. 2006	Osteoarthritis of the knee and hip and activity: a systematic international review and synthesis (OASIS)
Roddy, et al. 2005	Evidence-based recommendations for the role of exercise in the management of osteoarthritis of the hip or knee--the MOVE consensus
Godwin, et al. 2004	Intra-articular steroid injections for painful knees. Systematic review with meta-analysis
Virolainen, et al. 2004	High tibial osteotomy for the treatment of osteoarthritis of the knee: a review of the literature and a meta-analysis of follow-up studies
Jordan, et al. 2003	EULAR Recommendations 2003: an evidence based approach to the management of knee osteoarthritis: Report of a Task Force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT)
Towheed, et al. 1997	A systematic review of randomized controlled trials of pharmacological therapy in osteoarthritis of the knee, with an emphasis on trial methodology

Evidence Table 4. Systematic Review AMSTAR Results

<p>● = Yes</p> <p>○ = No</p> <p>◐ = Can't Answer</p> <p>n/a = not applicable</p>		Was an 'a priori' design provided?	Was there duplicate study selection and data extraction?	Was a comprehensive literature search performed?	Was the status of publication (i.e. grey literature) used as an inclusion criterion?	Was a list of studies (included and excluded) provided?	Were the characteristics of the included studies provided?	Was the scientific quality of the included studies assessed and documented?	Was the scientific quality of the included studies used appropriately in formulating conclusions?	Were the methods used to combine the findings of studies appropriate?	Was the likelihood of publication bias assessed?	Was the conflict of interest stated?
Author	Applicable Recommendation(s)											
Brouwer, et al. 2005	7,8,9	●	◐	●	●	●	●	●	●	n/a	n/a	●
Laupattarakasem, et al. 2008	17,18	●	◐	●	●	●	●	●	●	n/a	n/a	●
Warden, et al. 2008	6	●	○	●	●	○	●	●	●	●	n/a	○
Bjordal, et al. 2007	11,12,13,14	●	◐	●	●	○	●	●	●	●	○	●
Siparsky, et al. 2007	17,18	●	●	●	●	○	○	●	●	n/a	n/a	○
Bellamy, et al. 2006	14	●	○	●	●	●	●	●	●	●	n/a	●
Reilly, et al. 2006	7	●	●	●	●	○	○	●	●	n/a	n/a	●
OASIS 2006	5	●	●	●	●	○	○	●	●	n/a	n/a	○
Roddy, et al. 2005	5	●	●	●	●	●	●	●	●	●	○	●
MOVE 2005	5	●	◐	●	●	○	○	●	●	○	○	●
Arroll, et al. 2004	14	●	●	●	○	○	●	●	●	●	●	●
Godwin, et al. 2004	14	●	◐	●	●	○	●	○	○	●	n/a	●
Virolainen, et al. 2004	19,20	●	◐	○	◐	○	○	○	◐	○	○	○
EULAR 2003	ALL	●	◐	●	●	○	○	●	●	n/a	n/a	●
Towheed, et al. 1997	11,12,14,15	●	◐	○	●	○	○	●	●	n/a	n/a	●

Evidence Table 5. Relevant Systematic Reviews

<u>Author</u>	<u>Title</u>
Brouwer, et al. 2008	Braces and orthoses for treating osteoarthritis of the knee
Laupattarakasem, et al. 2008	Arthroscopic debridement for knee osteoarthritis
Warden, et al. 2008	Patellar taping and bracing for the treatment of chronic knee pain: a systematic review and meta-analysis.
Bjordal, et al. 2007	Short-term efficacy of pharmacotherapeutic interventions in osteoarthritic knee pain: A meta-analysis of randomised placebo-controlled trials
Brouwer, et al. 2007	Osteotomy for treating knee osteoarthritis*
Manheimer, et al. 2007	Meta-analysis: acupuncture for osteoarthritis of the knee*
Siparsky, et al. 2007	Arthroscopic treatment of osteoarthritis of the knee: are there any evidence-based indications?
White, et al. 2007	Acupuncture treatment for chronic knee pain: a systematic review*
Bellamy, et al. 2006	Intraarticular corticosteroid for treatment of osteoarthritis of the knee
Kwon, et al. 2006	Acupuncture for peripheral joint osteoarthritis: a systematic review and meta-analysis*
Reilly, et al. 2006	A systematic review of lateral wedge orthotics--how useful are they in the management of medial compartment osteoarthritis?
Vignon, et al. 2006	Osteoarthritis of the knee and hip and activity: a systematic international review and synthesis (OASIS)

* Authors conclusions considered, no quality analysis, data extraction, or outcomes analysis

Evidence Table 5. Relevant Systematic Reviews

<u>Author</u>	<u>Title</u>
Yamashita, et al. 2006	Safety of acupuncture for osteoarthritis of the knee -- a review of randomised controlled trials, focusing on specific reactions to acupuncture*
Roddy, et al. 2005	Aerobic walking or strengthening exercise for osteoarthritis of the knee? A systematic review
Roddy, et al. 2005	Evidence-based recommendations for the role of exercise in the management of osteoarthritis of the hip or knee--the MOVE consensus
Arroll, et al. 2004	Corticosteroid injections for osteoarthritis of the knee: meta-analysis
Godwin, et al. 2004	Intra-articular steroid injections for painful knees. Systematic review with meta-analysis
Virolainen, et al. 2004	High tibial osteotomy for the treatment of osteoarthritis of the knee: a review of the literature and a meta-analysis of follow-up studies
Jordan, et al. 2003	EULAR Recommendations 2003: an evidence based approach to the management of knee osteoarthritis: Report of a Task Force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT)
Ferrandez, et al. 2002	Effectiveness of acupuncture in the treatment of pain from osteoarthritis of the knee*
Ezzo, et al. 2001	Acupuncture for osteoarthritis of the knee: a systematic review*
Towheed, et al. 1997	A systematic review of randomized controlled trials of pharmacological therapy in osteoarthritis of the knee, with an emphasis on trial methodology
Puett, et al. 1994	Published trials of nonmedicinal and noninvasive therapies for hip and knee osteoarthritis*

* Authors conclusions considered, no quality analysis, data extraction, or outcomes analysis

Evidence Table 6. Primary Studies Included in Quadriceps Strengthening Systematic Review (Roddy, et al)

<u>Author</u>	<u>Title</u>
Quilty, et al. 2003	Physiotherapy, including quadriceps exercises and patellar taping, for knee osteoarthritis with predominant patello-femoral joint involvement: randomized controlled trial
Thomas, et al. 2002	Home based exercise programme for knee pain and knee osteoarthritis: randomised controlled trial
Topp, et al. 2002	The effect of dynamic versus isometric resistance training on pain and functioning among adults with osteoarthritis of the knee
Baker, et al. 2001	The efficacy of home based progressive strength training in older adults with knee osteoarthritis: a randomized controlled trial
Fransen, et al. 2001	Physical therapy is effective for patients with osteoarthritis of the knee: a randomized controlled clinical trial
Hopman-Rock, et al. 2000	The effects of a health educational and exercise program for older adults with osteoarthritis for the hip or knee
Petrella, et al. 2000	Home based exercise therapy for older patients with knee osteoarthritis: a randomized clinical trial
O'Reilly, et al. 1999	Effectiveness of home exercise on pain and disability from osteoarthritis of the knee: a randomised controlled trial
vanBaar, et al. 1998	The effectiveness of exercise therapy in patients with osteoarthritis of the hip or knee: a randomized clinical trial
Ettinger, et al. 1997	A Randomized Trial Comparing Aerobic Exercise and Resistance Exercise with a Health Education Program in Older Adults with Knee Osteoarthritis The Fitness and Seniors Trial (FAST)

ABBREVIATIONS USED IN ANALYSIS/RESULTS TABLES

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OR(c) = Odds Ratio calculated (from raw data)

Statistical Significance = determined by calculated Effect Size “ES(c)”

ns No statistically significant difference was detected between groups

↑ Statistically significant difference in favor of treatment of interest

↓ Statistically significant difference in favor of other treatment

ES(md) = minimum detectable effect size (two-tailed, $\alpha = 0.05$, $1-\beta = 0.80$)

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MISCELLANEOUS ABBREVIATIONS

NR = not reported

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RCT = randomized controlled trial

ES = Effect Size

MD = Mean difference

SMD = Standardized mean difference

WMD = Weighted mean difference

RR = Relative Risk

OR = Odds Ratio

d = Cohen's *d*

0.2 = small effect

0.5 = moderate effect

0.8 = large effect

Evidence Table 7. Analysis of Quadriceps Strengthening Systematic Review (Roddy, et al)

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	Statistical Significance	ES (md)	MCII	Power
Pain	8 weeks - 2 years	quadriceps strengthening vs. control*	ES = 0.32 (0.23, 0.42)	9 RCT** // n = 2004	$d = 0.32$ (0.23, 0.42)	↑	n/a***	****	?
Function	8 weeks - 2 years	quadriceps strengthening vs. control*	ES = 0.32 (0.23, 0.41)	9 RCT** // n = 2004	$d = 0.32$ (0.23, 0.41)	↑	n/a***	****	?

* control interventions included education + lifestyle advice (3 studies) or no intervention (6 studies)

** a 10th RCT was excluded from meta-analysis to reduce heterogeneity (larger effect size for pain): this study differed in two ways: 1) the NSAID, oxaprozin, was prescribed to all participants in both groups 2) the control group underwent a sham exercise program

*** Minimum detectable effect sizes were not calculated when studies were pooled

**** The majority of included studies used WOMAC to measure these outcomes.

Evidence Table 8. Primary Studies Included in Patellar Taping Systematic Review (Warden, et al)

<u>Author</u>	<u>Title</u>
Hinman, et al. 2003	Immediate effects of adhesive tape on pain and disability in individuals with knee osteoarthritis
Hinman, et al. 2003	Efficacy of knee tape in the management of osteoarthritis of the knee: blinded randomised controlled trial
Cushnaghan, et al. 1994	Taping the patella medially: a new treatment for osteoarthritis of the knee joint?

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Evidence Table 9. Analysis of Patellar Taping Systematic Review (Warden, et al)

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	Statistical Significance	ES (md)	MCII	Power
Pain - VAS	4 days	Medially-directed vs sham tape	$d = 0.94 (0.42, 1.47)$	1 RCT // n=14	$d = 0.94 (0.42, 1.47)$	↑	$d = 0.81$	$d = 1.23$	●
Pain - VAS	4 days	Laterally-directed vs sham tape	$d = -0.05 (-0.57, 0.48)$	1 RCT // n=14	$d = -0.05 (-0.57, 0.48)$	ns	$d = 0.81$	$d = 1.23$	●
Pain - VAS	4 days	Medially-directed vs Laterally-directed tape	$d = 0.95 (0.42, 1.48)$	1 RCT // n=14	$d = 0.95 (0.42, 1.48)$	↑	$d = 0.81$	$d = 1.23$	●
Pain on walking - VAS	Immediate	Medially-directed vs sham tape	$d = 0.91 (0.34, 1.47)$	1 RCT // n=18	$d = 0.91 (0.34, 1.47)$	↑	$d = 0.70$	$d = 1.23$	●
Pain on walking - VAS	Immediate	Medially-directed vs no tape	$d = 1.08 (0.51, 1.64)$	1 RCT // n=18	$d = 1.08 (0.51, 1.64)$	↑	$d = 0.70$	$d = 1.23$	●
Pain on movement - VAS	3 weeks	Medially-directed vs sham tape	$d = 0.35 (-0.03, 0.73)$	1 RCT // n=58	$d = 0.35 (-0.03, 0.73)$	ns	$d = 0.75$	$d = 1.23$	●
Pain on movement - VAS	3 weeks	Medially-directed vs no tape	$d = 1.22 (0.42, 1.62)$	1 RCT // n=58	$d = 1.22 (0.42, 1.62)$	↑	$d = 0.75$	$d = 1.23$	●

Evidence Table 10. Primary Studies Included in Lateral Heel Wedges Systematic Review (Brouwer, et al)

<u>Author</u>	<u>Title</u>
Toda, et al. 2006	A 2-year follow-up of a study to compare the efficacy of lateral wedged insoles with subtalar strapping and in-shoe lateral wedged insoles in patients with varus deformity osteoarthritis of the knee
Pham, et al. 2004	Laterally elevated wedged insoles in the treatment of medial knee osteoarthritis. A two-year prospective randomized controlled study
Toda, et al. 2004	A six-month followup of a randomized trial comparing the efficacy of a lateral-wedge insole with subtalar strapping and an in-shoe lateral-wedge insole in patients with varus deformity osteoarthritis of the knee
Toda, et al. 2002	Usefulness of an insole with subtalar strapping for analgesia in patients with medial compartment osteoarthritis of the knee
Maillefert, et al. 2001	Laterally elevated wedged insoles in the treatment of medial knee osteoarthritis: a prospective randomized controlled study
Toda, et al. 2001	Effect of a novel insole on the subtalar joint of patients with medial compartment osteoarthritis of the knee

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Evidence Table 11. Analysis of Lateral Heel Wedges Systematic Review (Brouwer, et al)

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power
WOMAC - pain	1 month	laterally wedged vs neutrally wedged insole	WMD = 5.20 (-0.78, 11.18)	1 RCT // n = 156	$d = -0.28 (-0.60, 0.03)$		ns	$d = 0.45$	$d = 0.39$	○
	3 months	laterally wedged vs neutrally wedged insole	WMD = 5.50 (-1.95, 12.95)	1 RCT // n = 156	$d = -0.24 (-0.56, 0.08)$		ns	$d = 0.45$	$d = 0.39$	○
	6 months	laterally wedged vs neutrally wedged insole	WMD = 6.40 (-0.07, 12.87)	1 RCT // n = 156	$d = -0.32 (-0.64, -0.04)$		↓	$d = 0.45$	$d = 0.39$	○
	12 months	laterally wedged vs neutrally wedged insole	WMD = 2.20 (-5.31, 9.71)	1 RCT // n = 156	$d = -0.10 (-0.41, 0.22)$		ns	$d = 0.45$	$d = 0.39$	○
	24 months	laterally wedged vs neutrally wedged insole	WMD = 2.80 (-6.12, 11.72)	1 RCT // n = 156	$d = -0.12 (-0.43, 0.20)$		ns	$d = 0.45$	$d = 0.39$	○
WOMAC - stiffness	1 month	laterally wedged vs neutrally wedged insole	WMD = 5.50 (-1.95, 12.95)	1 RCT // n = 156	$d = -0.24 (-0.56, 0.08)$		ns	$d = 0.45$	$d = 0.39$	○
	3 months	laterally wedged vs neutrally wedged insole	WMD = 4.20 (-2.61, 11.01)	1 RCT // n = 156	$d = -0.20 (-0.51, 0.12)$		ns	$d = 0.45$	$d = 0.39$	○
	6 months	laterally wedged vs neutrally wedged insole	WMD = 4.30 (-3.20, 11.80)	1 RCT // n = 156	$d = -0.19 (-0.50, 0.13)$		ns	$d = 0.45$	$d = 0.39$	○
	12 months	laterally wedged vs neutrally wedged insole	WMD = -1.10 (-9.03, 6.83)	1 RCT // n = 156	$d = 0.05 (-0.27, 0.36)$		ns	$d = 0.46$	$d = 0.39$	○
	24 months	laterally wedged vs neutrally wedged insole	WMD = 1.80 (-7.22, 10.82)	1 RCT // n = 156	$d = -0.08 (-0.39, 0.24)$		ns	$d = 0.47$	$d = 0.39$	○
WOMAC - function	1 month	laterally wedged vs neutrally wedged insole	WMD = 2.60 (-3.40, 8.60)	1 RCT // n = 156	$d = -0.14 (-0.46, 0.17)$		ns	$d = 0.45$	$d = 0.37$	○
	3 months	laterally wedged vs neutrally wedged insole	WMD = 5.20 (-0.94, 11.34)	1 RCT // n = 156	$d = -0.27 (-0.59, 0.04)$		ns	$d = 0.45$	$d = 0.37$	○
	6 months	laterally wedged vs neutrally wedged insole	WMD = 6.00 (-0.48, 12.48)	1 RCT // n = 156	$d = -0.30 (-0.62, 0.02)$		ns	$d = 0.45$	$d = 0.37$	○
	12 months	laterally wedged vs neutrally wedged insole	WMD = 0.60 (-6.86, 8.06)	1 RCT // n = 156	$d = -0.03 (-0.34, 0.29)$		ns	$d = 0.45$	$d = 0.37$	○
	24 months	laterally wedged vs neutrally wedged insole	WMD = -0.40 (-9.47, 8.67)	1 RCT // n = 156	$d = 0.02 (-0.30, 0.33)$		ns	$d = 0.45$	$d = 0.37$	○
Patient Global Assessment	24 months	laterally wedged vs neutrally wedged insole	WMD = -1.60 (-10.61, 7.41)	1 RCT // n = 156	$d = -0.07 (-0.38, 0.25)$		ns	$d = 0.45$?
NSAID intake	3 months	laterally wedged vs neutrally wedged insole	WMD = -5.10 (-14.02, 3.82)	1 RCT // n = 156	$d = 0.19 (-0.13, 0.50)$		ns	$d = 0.45$?
Analgesic intake	3 months	laterally wedged vs neutrally wedged insole	WMD = -1.90 (-12.42, 8.62)	1 RCT // n = 156	$d = 0.06 (-0.26, 0.37)$		ns	$d = 0.45$?
VAS - pain	8 weeks	laterally wedged vs subtalar strapped insole	WMD = -9.20 (-18.28, -0.12)	1 RCT // n = 90	$d = -0.42 (-0.84, -0.01)$		↓	$d = 0.60$	$d = 1.23$	●
	6 months	laterally wedged vs subtalar strapped insole	WMD = -11.80 (-22.04, -1.56)	1 RCT // n = 90	$d = -0.58 (-1.00, -0.16)$		↓	$d = 0.60$	$d = 1.23$	●
	24 months	laterally wedged vs subtalar strapped insole	WMD = -2.00 (-13.34, 9.34)	1 RCT // n = 90	$d = -0.11 (-0.52, 0.31)$		ns	$d = 0.60$	$d = 1.23$	●
Lequesne index	8 weeks	laterally wedged vs subtalar strapped insole	WMD = -0.60 (-2.81, 1.61)	1 RCT // n = 90	$d = -0.11 (-0.53, 0.30)$		ns	$d = 0.60$?
	8 weeks	lateral wedge w/ sock-type ankle support vs subtalar strapped insole	WMD = -1.8 (p=0.061)	1 RCT // n = 88	$d = -0.33 (-0.76, 0.09)^*$		ns	$d = 0.60$?
	6 months	laterally wedged vs subtalar strapped insole	WMD = -1.50 (-4.23, 1.23)	1 RCT // n = 90	$d = -0.28 (-0.69, 0.14)$		ns	$d = 0.60$?
	24 months	laterally wedged vs subtalar strapped insole	WMD = -2.30 (-5.45, 0.85)	1 RCT // n = 90	$d = -0.44 (-0.86, -0.02)$		ns	$d = 0.60$?
Adverse effects	8 weeks	laterally wedged vs subtalar strapped insole	RR = 5.74 (0.72, 45.77)	1 RCT // n = 90		OR = 6.45 (0.74, 55.95)	ns	OR = 10.5		?

*estimated based on assumptions of equal variances and one-tailed test (standard deviations not reported)

Evidence Table 12. Primary Studies Included in Knee Braces Systematic Review (Brouwer, et al)

<u>Author</u>	<u>Title</u>
Brouwer, et al. 2006	Brace treatment for osteoarthritis of the knee: a prospective randomized multi-centre trial
Kirkley, et al. 1999	The effect of bracing on varus gonarthrosis

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Evidence Table 13. Analysis of Knee Braces Systematic Review (Brouwer, et al)

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power
Pain - VAS	6 months	brace vs no brace	WMD = 1.00 (-7.07, 9.07)	1 RCT // n = 117	d = 0.05 (-0.41, 0.32)		ns	d = 0.52	d = 1.23	●
	12 months	brace vs no brace	WMD = 0.00 (-8.41, 8.41)	1 RCT // n = 117	d = 0.00 (-0.36, 0.36)		ns	d = 0.53	d = 1.23	●
Knee Function (HSS)	6 months	brace vs no brace	WMD = 1.40 (-2.36, 5.16)	1 RCT // n = 117	d = 0.14 (-0.22, 0.50)		ns	d = 0.54		?
	12 months	brace vs no brace	WMD = 1.00 (-2.98, 4.98)	1 RCT // n = 117	d = 0.09 (-0.27, 0.46)		ns	d = 0.55		?
Walking Distance (km)	6 months	brace vs no brace	WMD = -0.10 (-1.32, 1.12)	1 RCT // n = 117	d = -0.03 (-0.39, 0.33)		ns	d = 0.56		?
	12 months	brace vs no brace	WMD = 0.40 (-0.87, 1.67)	1 RCT // n = 117	d = 0.11 (-0.25, 0.48)		ns	d = 0.57		?
Quality of Life (EQ-5D)	6 months	brace vs no brace	WMD = -0.05 (-0.14, 0.04)	1 RCT // n = 117	d = -0.21 (-0.57, 0.15)		ns	d = 0.58		?
	12 months	brace vs no brace	WMD = -0.04 (-0.12, 0.04)	1 RCT // n = 117	d = -0.17 (-0.54, 0.19)		ns	d = 0.59		?
WOMAC	6 months	brace vs sleeve vs control	NR*	1 RCT // n = 110	NR*	NR*	NR*	n/a*		?
MACTAR	6 months	brace vs sleeve vs control	NR*	1 RCT // n = 110	NR*	NR*	NR*	n/a*		?
pain on 6-minute walk test	6 months	brace vs sleeve vs control	NR*	1 RCT // n = 110	NR*	NR*	NR*	n/a*		?
pain on 30-sec stair-climbing test	6 months	brace vs sleeve vs control	NR*	1 RCT // n = 110	NR*	NR*	NR*	n/a*		?

*Review presented no quantitative results, reporting only that the brace group improved more than the neoprene sleeve group, which improved more than the control group for each of these outcomes.

Evidence Table 14. Knee Braces - AAOS Analysis of Kirkley, et al.

Comparison of Knee Braces to Control at 6 months

Outcomes	Result	MCII
WOMAC - pain	MD = 11.3 (p < .001)	8.3
WOMAC - function	MD = 9.63 (p = .001)	8
WOMAC - stiffness	MD = 18.4 (p < .001)	10
WOMAC - total	MD = 10.7 (p < .001)	8.2
Pain on 6-min test - VAS	MD = 18.9 (p < .001)	19.9
Pain on 30-sec test - VAS	MD = 21.5 (p < .001)	19.9
6-min walk distance	MD = 4.1 (ns)	—
30-sec stair climbing test	MD = 16.21 (ns)	—
MACTAR	MD = 11.6 (p = .017)	—
Clinical Success Rate*	RR = 3.35 (p < .001)	—

*Success = change of 1 cm on 10-cm VAS for pain after 6-min walking test

Evidence Table 15. Included Studies for AAOS Acupuncture Analysis

<u>Author</u>	<u>Title</u>
Foster, et al. 2007	Acupuncture as an adjunct to exercise based physiotherapy for osteoarthritis of the knee: randomised controlled trial
Scharf, et al. 2006	Acupuncture and knee osteoarthritis: a three-armed randomized trial
Witt, et al. 2006	Acupuncture in patients with osteoarthritis of the knee or hip: a randomized, controlled trial with an additional nonrandomized arm
Witt, et al. 2005	Acupuncture in patients with osteoarthritis of the knee: a randomised trial
Berman, et al. 2004	Effectiveness of acupuncture as adjunctive therapy in osteoarthritis of the knee: a randomized, controlled trial
Tukmachi, et al. 2004	The effect of acupuncture on the symptoms of knee osteoarthritis--an open randomised controlled study
Vas, et al. 2004	Acupuncture as a complementary therapy to the pharmacological treatment of osteoarthritis of the knee: randomised controlled trial
Ng, et al. 2003	The effects of electro-acupuncture and transcutaneous electrical nerve stimulation on patients with painful osteoarthritic knees: a randomized controlled trial with follow-up evaluation
Sangdee, et al. 2002	Electroacupuncture versus diclofenac in symptomatic treatment of osteoarthritis of the knee: a randomized controlled trial
Berman, et al. 1999	A randomized trial of acupuncture as an adjunctive therapy in osteoarthritis of the knee
Yurtkuran, et al. 1999	TENS, electroacupuncture and ice massage: comparison of treatment for osteoarthritis of the knee
Molsberger, et al. 1994	Schmerztherapie mit Akupunktur bei Gonarthrose
Takeda, et al. 1994	Acupuncture for the treatment of pain of osteoarthritic knees
Christensen, et al. 1992	Acupuncture treatment of severe knee osteoarthrosis. A long-term study

Evidence Table 16. Excluded Studies for AAOS Acupuncture Analysis

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Linde, et al. 2007	The impact of patient expectations on outcomes in four randomized controlled trials of acupuncture in patients with chronic pain	Not Relevant
Yurtkuran, et al. 2007	Laser acupuncture in knee osteoarthritis: a double-blind, randomized controlled study	Not Relevant (treatment)
Manheimer, et al. 2006	Acupuncture for knee osteoarthritis -- a randomised trial using a novel sham	Duplicate article
Vas, et al. 2006	Acupuncture vs Streitberger needle in knee osteoarthritis -- an RCT	Duplicate article
Jia, et al. 2005	Acupuncture combined with function exercise for the elder patients with knee osteoarthritis	Could not retrieve
Kwon, et al. 2001	The analgesic efficacy of bee venom acupuncture for knee osteoarthritis: a comparative study with needle acupuncture	Not Relevant (comparison)
Singh, et al. 2001	Clinical decisions in the use of acupuncture as an adjunctive therapy for osteoarthritis of the knee	Duplicate article
Berman, et al. 1995	Efficacy of traditional Chinese acupuncture in the treatment of symptomatic knee osteoarthritis: a pilot study	Not a RCT
Lundeberg, et al. 1991	Effect of acupuncture and naloxone in patients with osteoarthritis pain. A sham acupuncture controlled study	Not specific to knee OA
Ammer, et al. 1988	[Comparison of the effectiveness of acupuncture and physical therapy in ambulatory patients with gonarthrosis]	Foreign Language
Petrou, et al. 1988	Double-blind trial to evaluate the effect of acupuncture treatment on knee osteoarthritis	Could not retrieve
Junnila, et al. 1982	Acupuncture Superior to Piroxicam in the Treatment of Osteoarthritis	Not a RCT
Gaw, et al. 1975	Efficacy of acupuncture on osteoarthritic pain. A controlled, double-blind study	Not specific to knee OA

ABBREVIATIONS USED IN ANALYSIS/RESULTS TABLES

ES(c) = Effect Size calculated (from raw data)

OR(c) = Odds Ratio calculated (from raw data)

Statistical Significance = determined by calculated Effect Size “ES(c)”

ns No statistically significant difference was detected between groups

↑ Statistically significant difference in favor of treatment of interest

↓ Statistically significant difference in favor of other treatment

ES(md) = minimum detectable effect size (two-tailed, $\alpha = 0.05$, $1-\beta = 0.80$)

MCII = Minimal Clinically Important Improvement

Power = powered to detect the MCII

- Powered to detect MCII
- Not powered to detect MCII
- ? Unable to determine if powered to detect MCII

MISCELLANEOUS ABBREVIATIONS

NR = not reported

n/a = not applicable

RCT = randomized controlled trial

ES = Effect Size

MD = Mean difference

SMD = Standardized mean difference

WMD = Weighted mean difference

RR = Relative Risk

OR = Odds Ratio

d = Cohen's *d*

0.2 = small effect

0.5 = moderate effect

0.8 = large effect

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
WOMAC Pain	3 weeks	Manual Acupuncture v Placebo	3.7 (-4.2, 11.6)	40	d = 0.29 (-0.33, 0.91)		ns	d = 0.91	d = 0.39	○	Takeda (1994)
	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	1.9 (0.2, 3.6)	95	d = 0.46 (0.05, 0.86)		↑	d = 0.58	d = 0.39	○	Sangdee (2002)
	4 weeks	Electro-Acupuncture v Placebo	0.2 (-0.5, 0.9)	336	d = 0.06 (-0.15, 0.28)		ns	d = 0.31	d = 0.39	●	Berman (2004)
	4 weeks	Electro-Acupuncture v Placebo	2.3 (0.6, 3.9)	91	d = 0.57 (0.15, 0.98)		↑	d = 0.59	d = 0.39	○	Sangdee (2002)
	4 weeks	Manual Acupuncture v Placebo	5.4 (-4.5, 15.3)	40	d = 0.34 (-0.28, 0.97)		ns	d = 0.91	d = 0.39	○	Takeda (1994)
	6 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.4 (-1.5, 0.7)	228	d = -0.1 (-0.35, 0.16)		ns	d = 0.37	d = 0.39	●	Foster (2007)
	8 weeks	Electro-Acupuncture v Placebo	0.5 (-0.3, 1.2)	330	d = 0.14 (-0.08, 0.35)		ns	d = 0.31	d = 0.39	●	Berman (2004)
	8 weeks	Manual Acupuncture v Placebo	8.8 (4.0, 13.6)	218	d = 0.52 (0.23, 0.81)		↑	d = 0.40	d = 0.39	○	Witt (2005)
	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	4.7 (2.9, 6.5)	88	d = 1.04 (0.62, 1.47)		↑	d = 0.57	d = 0.39	○	Vas (2004)
	13 weeks	Manual Acupuncture v Placebo	0.3 (-0.1, 0.7)	691	d = 0.13 (-0.02, 0.28)		ns	d = 0.21	d = 0.39	●	Scharf (2006)
	14 weeks	Electro-Acupuncture v Placebo	0.9 (0.2, 1.7)	315	d = 0.27 (0.05, 0.5)		↑	d = 0.32	d = 0.39	●	Berman (2004)
	26 weeks	Electro-Acupuncture v Placebo	0.8 (0.1, 1.6)	283	d = 0.25 (0.02, 0.48)		↑	d = 0.33	d = 0.39	●	Berman (2004)
	26 weeks	Manual Acupuncture v Placebo	0.3 (-0.1, 0.7)	691	d = 0.12 (-0.03, 0.27)		ns	d = 0.21	d = 0.39	●	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	4.9 (-1.3, 11.1)	218	d = 0.22 (-0.06, 0.5)		ns	d = 0.40	d = 0.39	○	Witt (2005)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.6 (-1.8, 0.6)	220	d = -0.12 (-0.39, 0.14)		ns	d = 0.38	d = 0.39	●	Foster (2007)
	52 weeks	Manual Acupuncture v Placebo	3.5 (-2.6, 9.6)	218	d = 0.15 (-0.13, 0.44)		ns	d = 0.40	d = 0.39	○	Witt (2005)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.7 (-2.0, 0.6)	204	d = -0.14 (-0.42, 0.13)		ns	d = 0.39	d = 0.39	●	Foster (2007)
	VAS Pain	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	9.76 (0.79, 18.73)	95	d = 0.44 (0.03, 0.84)		↑	d = 0.58	d = 1.23	●
4 weeks		Electro-Acupuncture v Placebo	22 (12.82, 31.18)	91	d = 0.98 (0.55, 1.42)		↑	d = 0.59	d = 1.23	●	Sangdee (2002)
5 weeks		Manual Acupuncture v Placebo	1.1 (0.2, 1.9)	91	d = 0.55 (0.1, 1.01)		↑	d = 0.59	d = 1.23	●	Molsberger (1994)
12 weeks		Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	26.6 (18.63, 34.57)	88	d = 1.32 (0.88, 1.76)		↑	d = 0.57	d = 1.23	●	Vas (2004)
Pain Intensity (NRS)	2 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.1 (-0.67, 0.47)	227	d = -0.05 (-0.31, 0.21)		ns	d = 0.37		?	Foster (2007)
	6 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-1.27 (-1.85, -0.69)	228	d = -0.58 (-0.84, -0.31)		ns	d = 0.38		?	Foster (2007)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.63 (-1.21, -0.05)	220	d = -0.29 (-0.55, -0.02)		ns	d = 0.38		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-1.32 (-1.93, -0.71)	204	d = -0.6 (-0.88, -0.32)		↓	d = 0.39		?	Foster (2007)
Pain Unpleasantness (NRS)	6 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.12 (-0.72, 0.48)	228	d = -0.05 (-0.31, 0.21)		ns	d = 0.38		?	Foster (2007)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	0.3 (-0.31, 0.91)	220	d = 0.13 (-0.14, 0.4)		ns	d = 0.38		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.29 (-0.92, 0.34)	204	d = -0.13 (-0.4, 0.15)		ns	d = 0.39		?	Foster (2007)

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
Pain affective (SES)	8 weeks	Manual Acupuncture v Placebo	1.7 (-0.78, 4.18)	218	d = 0.18 (-0.1, 0.46)		ns	d = 0.40		?	Witt (2005)
	26 weeks	Manual Acupuncture v Placebo	2.1 (-0.53, 4.73)	218	d = 0.22 (-0.06, 0.51)		ns	d = 0.40		?	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	1.6 (-1.31, 4.51)	218	d = 0.16 (-0.13, 0.44)		ns	d = 0.40		?	Witt (2005)
Pain sensoric (SES)	8 weeks	Manual Acupuncture v Placebo	0.8 (-1.76, 3.36)	218	d = 0.08 (-0.2, 0.36)		ns	d = 0.40		?	Witt (2005)
	26 weeks	Manual Acupuncture v Placebo	2 (-0.61, 4.61)	218	d = 0.22 (-0.07, 0.5)		ns	d = 0.40		?	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	0.7 (-2.33, 3.73)	218	d = 0.06 (-0.22, 0.34)		ns	d = 0.40		?	Witt (2005)
Pain Rating Index	3 weeks	Manual Acupuncture v Placebo	7.8 (1.97, 13.63)	40	d = 0.83 (0.18, 1.48)		↑	d = 0.91		?	Takeda (1994)
	4 weeks	Manual Acupuncture v Placebo	4.8 (-3.54, 13.14)	40	d = 0.36 (-0.27, 0.98)		ns	d = 0.91		?	Takeda (1994)
Present Pain Intensity (PPI)	2 weeks	Electro-Acupuncture v Placebo	0.5 (0.3, 0.7)	50	d = 1.77 (1.11, 2.42)		↑	d = 0.80		?	Yurtkuran (1999)
Pain Disability Index	8 weeks	Manual Acupuncture v Placebo	5.8 (2.96, 8.64)	218	d = 0.54 (0.25, 0.82)		↑	d = 0.40		?	Witt (2005)
	26 weeks	Manual Acupuncture v Placebo	4.2 (0.1, 8.3)	218	d = 0.3 (0.02, 0.59)		↑	d = 0.40		?	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	3.6 (-0.53, 7.73)	218	d = 0.25 (-0.03, 0.53)		ns	d = 0.40		?	Witt (2005)
Lequesne Index	4 weeks	Electro-Acupuncture v Placebo	2.26 (0.86, 3.66)	91	d = 0.66 (0.24, 1.09)		↑	d = 0.59		?	Sangdee (2002)
	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.71 (-0.54, 1.96)	95	d = 0.23 (-0.18, 0.63)		ns	d = 0.58		?	Sangdee (2002)
WOMAC Stiffness	3 weeks	Manual Acupuncture v Placebo	1.78 (-1.5, 5.06)	40	d = 0.34 (-0.29, 0.96)		ns	d = 0.91	d = 0.39	○	Takeda (1994)
	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.28 (-0.43, 0.99)	95	d = 0.16 (-0.25, 0.56)		ns	d = 0.58	d = 0.39	○	Sangdee (2002)
	4 weeks	Electro-Acupuncture v Placebo	0.93 (0.14, 1.72)	91	d = 0.49 (0.07, 0.9)		↑	d = 0.59	d = 0.39	○	Sangdee (2002)
	4 weeks	Manual Acupuncture v Placebo	2.46 (-1.23, 6.15)	40	d = 0.41 (-0.21, 1.04)		ns	d = 0.91	d = 0.39	○	Takeda (1994)
	8 weeks	Manual Acupuncture v Placebo	9.6 (5.4, 13.8)	218	d = 0.61 (0.32, 0.89)		↑	d = 0.40	d = 0.39	○	Witt (2005)
	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	1.7 (0.88, 2.52)	88	d = 0.82 (0.41, 1.24)		↑	d = 0.57	d = 0.39	○	Vas (2004)
	13 weeks	Manual Acupuncture v Placebo	0.2 (-0.19, 0.59)	691	d = 0.08 (-0.07, 0.23)		ns	d = 0.21	d = 0.39	●	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	0.3 (-0.09, 0.69)	691	d = 0.11 (-0.04, 0.26)		ns	d = 0.21	d = 0.39	●	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	5.6 (-1.67, 12.87)	218	d = 0.22 (-0.06, 0.5)		ns	d = 0.40	d = 0.39	○	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	9.7 (2.08, 17.32)	218	d = 0.37 (0.09, 0.65)		↑	d = 0.40	d = 0.39	○	Witt (2005)
WOMAC Function (continued on next page)	3 weeks	Manual Acupuncture v Placebo	10.33 (-13.72, 34.38)	40	d = 0.27 (-0.36, 0.89)		ns	d = 0.91	d = 0.37	○	Takeda (1994)
	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	2.3 (-2.91, 7.51)	95	d = 0.18 (-0.23, 0.58)		ns	d = 0.58	d = 0.37	○	Sangdee (2002)
	4 weeks	Electro-Acupuncture v Placebo	1.64 (-0.93, 4.21)	336	d = 0.14 (-0.08, 0.35)		ns	d = 0.31	d = 0.37	●	Berman (2004)
	4 weeks	Electro-Acupuncture v Placebo	5.88 (0.7, 11.06)	91	d = 0.47 (0.05, 0.88)		↑	d = 0.59	d = 0.37	○	Sangdee (2002)
	4 weeks	Manual Acupuncture v Placebo	11.99 (-15.73, 39.71)	40	d = 0.27 (-0.35, 0.89)		ns	d = 0.91	d = 0.37	○	Takeda (1994)
	6 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.24 (-4.21, 3.73)	228	d = -0.02 (-0.28, 0.25)		ns	d = 0.38	d = 0.37	○	Foster (2007)

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
WOMAC Function (continued from previous page)	8 weeks	Electro-Acupuncture v Placebo	2.91 (0.31, 5.51)	330	d = 0.24 (0.03, 0.46)		↑	d = 0.31	d = 0.37	●	Berman (2004)
	8 weeks	Manual Acupuncture v Placebo	8.8 (5.19, 12.41)	218	d = 0.65 (0.36, 0.94)		↑	d = 0.40	d = 0.37	○	Witt (2005)
	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	17.5 (11.09, 23.91)	88	d = 1.08 (0.65, 1.51)		↑	d = 0.57	d = 0.37	○	Vas (2004)
	13 weeks	Manual Acupuncture v Placebo	0.4 (0.04, 0.76)	691	d = 0.17 (0.02, 0.32)		↑	d = 0.21	d = 0.37	●	Scharf (2006)
	14 weeks	Electro-Acupuncture v Placebo	2.76 (0.1, 5.42)	315	d = 0.23 (0.01, 0.45)		↑	d = 0.32	d = 0.37	●	Berman (2004)
	26 weeks	Electro-Acupuncture v Placebo	2.52 (-0.28, 5.32)	283	d = 0.21 (-0.02, 0.44)		ns	d = 0.33	d = 0.37	●	Berman (2004)
	26 weeks	Manual Acupuncture v Placebo	0.4 (0.04, 0.76)	691	d = 0.17 (0.02, 0.32)		↑	d = 0.21	d = 0.37	●	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	6.1 (-0.26, 12.46)	218	d = 0.28 (-0.01, 0.56)		ns	d = 0.40	d = 0.37	○	Witt (2005)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-1.1 (-5.47, 3.27)	220	d = -0.07 (-0.33, 0.2)		ns	d = 0.38	d = 0.37	○	Foster (2007)
	52 weeks	Manual Acupuncture v Placebo	5.9 (-0.72, 12.52)	218	d = 0.25 (-0.03, 0.54)		ns	d = 0.40	d = 0.37	○	Witt (2005)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-1.36 (-5.92, 3.2)	204	d = -0.08 (-0.36, 0.19)		ns	d = 0.39	d = 0.37	○	Foster (2007)
50-ft Walk Time	2 weeks	Electro-Acupuncture v Placebo	15.7 (13.51, 17.89)	50	d = 3.97 (3, 4.93)		↑	d = 0.80		?	Yurtkuran (1999)
	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.2 (-2.04, 2.44)	95	d = 0.04 (-0.37, 0.44)		ns	d = 0.58		?	Sangdee (2002)
	4 weeks	Electro-Acupuncture v Placebo	-0.79 (-3.53, 1.95)	91	d = -0.12 (-0.53, 0.29)		ns	d = 0.59		?	Sangdee (2002)
6-min Walk Distance	8 weeks	Electro-Acupuncture v Placebo	16.4 (-54.85, 87.65)	330	d = 0.05 (-0.17, 0.27)		ns	d = 0.31		?	Berman (2004)
	26 weeks	Electro-Acupuncture v Placebo	-10.8 (-87.7, 66.1)	283	d = -0.03 (-0.27, 0.2)		ns	d = 0.33		?	Berman (2004)
Main Functional Problem Severity (NRS)	6 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.05 (-0.59, 0.49)	228	d = -0.02 (-0.29, 0.24)		ns	d = 0.38		?	Foster (2007)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	0.77 (0.23, 1.31)	220	d = 0.38 (0.11, 0.64)		↑	d = 0.38		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	-0.09 (-0.65, 0.47)	204	d = -0.04 (-0.32, 0.23)		ns	d = 0.39		?	Foster (2007)
SF-12 Physical Scale	13 weeks	Manual Acupuncture v Placebo	1 (-1.34, 3.34)	691	d = 0.06 (-0.09, 0.21)		ns	d = 0.21		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	0.9 (-1.44, 3.24)	691	d = 0.06 (-0.09, 0.21)		ns	d = 0.21		?	Scharf (2006)
SF-36 Physical Health Score	8 weeks	Electro-Acupuncture v Placebo	0.64 (-3.71, 4.99)	330	d = 0.03 (-0.18, 0.25)		ns	d = 0.31		?	Berman (2004)
	8 weeks	Manual Acupuncture v Placebo	3.1 (0.78, 5.42)	218	d = 0.35 (0.07, 0.64)		↑	d = 0.40		?	Witt (2005)
	26 weeks	Electro-Acupuncture v Placebo	1.54 (-3.16, 6.24)	283	d = 0.08 (-0.16, 0.31)		ns	d = 0.33		?	Berman (2004)
	26 weeks	Manual Acupuncture v Placebo	2.1 (-0.6, 4.8)	218	d = 0.23 (-0.05, 0.51)		ns	d = 0.40		?	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	2.2 (-0.52, 4.92)	218	d = 0.22 (-0.06, 0.51)		ns	d = 0.40		?	Witt (2005)
Depression (ADS)	8 weeks	Manual Acupuncture v Placebo	0.4 (-2.3, 3.1)	218	d = 0.04 (-0.24, 0.32)		ns	d = 0.40		?	Witt (2005)
	26 weeks	Manual Acupuncture v Placebo	0.5 (-2.17, 3.17)	218	d = 0.05 (-0.23, 0.33)		ns	d = 0.40		?	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	1.2 (-1.65, 4.05)	218	d = 0.12 (-0.16, 0.4)		ns	d = 0.40		?	Witt (2005)

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
SF-12 Mental Scale	13 weeks	Manual Acupuncture v Placebo	-0.9 (-5.2, 3.4)	691	d = -0.03 (-0.18, 0.12)		ns	d = 0.21		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	-1.5 (-5.8, 2.8)	691	d = -0.05 (-0.2, 0.1)		ns	d = 0.21		?	Scharf (2006)
SF-36 Mental Health Score	8 weeks	Manual Acupuncture v Placebo	1.7 (-0.86, 4.26)	218	d = 0.18 (-0.1, 0.46)		ns	d = 0.40		?	Witt (2005)
	26 weeks	Manual Acupuncture v Placebo	0.9 (-2.28, 4.08)	218	d = 0.08 (-0.2, 0.36)		ns	d = 0.40		?	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	1.8 (-1.43, 5.03)	218	d = 0.16 (-0.12, 0.44)		ns	d = 0.42		?	Witt (2005)
PLQC Negative Mood	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.1 (-0.18, 0.38)	88	d = 0.14 (-0.26, 0.54)		ns	d = 0.57		?	Vas (2004)
PLQC Physical Capability	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.3 (0, 0.6)	88	d = 0.4 (0, 0.8)		↑	d = 0.57		?	Vas (2004)
PLQC Psychological Functioning	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.2 (0, 0.4)	88	d = 0.39 (-0.01, 0.79)		ns	d = 0.57		?	Vas (2004)
PLQC Social Functioning	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.1 (-0.14, 0.34)	88	d = 0.16 (-0.23, 0.56)		ns	d = 0.57		?	Vas (2004)
PLQC Social Wellbeing	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0 (-0.2, 0.2)	88	d = 0 (-0.4, 0.4)		ns	d = 0.57		?	Vas (2004)
WOMAC Total	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	4.49 (-2.68, 11.66)	95	d = 0.25 (-0.15, 0.66)		ns	d = 0.58	d = 0.40	○	Sangdee (2002)
	4 weeks	Electro-Acupuncture v Placebo	9.11 (2.1, 16.12)	91	d = 0.53 (0.11, 0.95)		↑	d = 0.59	d = 0.40	○	Sangdee (2002)
	8 weeks	Manual Acupuncture v Placebo	8.9 (5.34, 12.46)	218	d = 0.66 (0.37, 0.95)		↑	d = 0.40	d = 0.40	●	Witt (2005)
	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	23.9 (15.15, 32.65)	88	d = 1.08 (0.65, 1.51)		↑	d = 0.57	d = 0.40	●	Vas (2004)
	13 weeks	Manual Acupuncture v Placebo	0.3 (-0.24, 0.84)	691	d = 0.08 (-0.07, 0.23)		ns	d = 0.21	d = 0.40	●	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	0.3 (-0.24, 0.84)	691	d = 0.08 (-0.07, 0.23)		ns	d = 0.21	d = 0.40	●	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	5.9 (-0.28, 12.08)	218	d = 0.27 (-0.01, 0.56)		ns	d = 0.40	d = 0.40	●	Witt (2005)
	52 weeks	Manual Acupuncture v Placebo	5.7 (-0.64, 12.04)	218	d = 0.25 (-0.03, 0.54)		ns	d = 0.40	d = 0.40	●	Witt (2005)
Patient Global Assessment	4 weeks	Electro-Acupuncture v Placebo	-0.1 (-0.3, 0.1)	336	d = -0.11 (-0.32, 0.11)		ns	d = 0.31		?	Berman (2004)
	8 weeks	Electro-Acupuncture v Placebo	0.03 (-0.17, 0.23)	330	d = 0.03 (-0.18, 0.25)		ns	d = 0.31		?	Berman (2004)
	14 weeks	Electro-Acupuncture v Placebo	-0.03 (-0.23, 0.17)	315	d = -0.03 (-0.25, 0.19)		ns	d = 0.32		?	Berman (2004)
	26 weeks	Electro-Acupuncture v Placebo	0.13 (-0.09, 0.35)	283	d = 0.14 (-0.09, 0.37)		ns	d = 0.33		?	Berman (2004)
Patient Global Assessment (binary)	13 weeks	Manual Acupuncture v Placebo	RR=1.08 (0.97, 1.21)	691		OR = 1.25 (0.91, 1.71)	ns	OR = 1.58		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	RR=1.16 (1.04, 1.29)	691		OR = 1.56 (1.13, 2.15)	↑	OR = 1.58		?	Scharf (2006)

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
Responders*	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	RR=1.42 (0.90, 2.25)	95		OR = 1.88 (0.83, 4.26)	ns	OR = 3.23		?	Sangdee (2002)
	4 weeks	Electro-Acupuncture v Placebo	RR=2.03 (1.21, 3.41)	91		OR = 3.50 (1.46, 8.36)	↑	OR = 4.01		?	Sangdee (2002)
	6 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	RR=1.00 (0.82, 1.23)	228		OR = 1.01 (0.59, 1.72)	ns	OR = 2.28		?	Foster (2007)
	8 weeks	Manual Acupuncture v Placebo	RR=1.89 (1.26, 2.83)	218		OR = 2.84 (1.54, 5.22)	↑	OR = 5.46		?	Witt (2005)
	13 weeks	Manual Acupuncture v Placebo	RR=1.05 (0.91, 1.22)	691		OR = 1.10 (0.82, 1.49)	ns	OR = 1.54		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	RR=1.04 (0.90, 1.20)	691		OR = 1.09 (0.81, 1.47)	ns	OR = 1.54		?	Scharf (2006)
	26 weeks	Electro-Acupuncture v Placebo	RR=1.12 (0.91, 1.38)	369		OR = 1.26 (0.83, 1.89)	ns	OR = 1.8		?	Berman (2004)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	RR=0.97 (0.75, 1.25)	222		OR = 0.93 (0.55, 1.58)	ns	OR = 2.17		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice, Exercise + Placebo	RR=0.94 (0.73, 1.21)	207		OR = 0.88 (0.51, 1.52)	ns	OR = 2.28		?	Foster (2007)
Diclofenac Intake	12 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	53.9 (25.25, 82.55)	88	d = 0.74 (0.33, 1.16)		↑	d = 0.57		?	Vas (2004)
Paracetamol Intake	4 weeks	Electro-Acupuncture + Diclofenac v Placebo + Diclofenac	0.6 (-5.35, 6.55)	95	d = 0.04 (-0.36, 0.44)		ns	d = 0.58		?	Sangdee (2002)
	4 weeks	Electro-Acupuncture v Placebo	3.39 (-2.51, 9.29)	91	d = 0.24 (-0.18, 0.65)		ns	d = 0.59		?	Sangdee (2002)
Adverse Events	26 weeks	Manual Acupuncture v Placebo	RR=1.05 (0.82, 1.34)	691		OR = 1.07 (0.77, 1.50)	ns	OR = 1.58		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	RR=0.77 (0.41, 1.47)	218		OR = 0.74 (0.34, 1.58)	ns	OR = 2.56		?	Witt (2005)
Serious Adverse Events	26 weeks	Manual Acupuncture v Placebo	RR=2.49 (1.15, 5.39)	691		OR = 2.59 (1.16, 5.76)	↑	OR = 1.29		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Placebo	RR=0.76 (0.13, 4.42)	218		OR = 0.75 (0.12, 4.59)	ns	OR = 5.46		?	Witt (2005)
	26 weeks	Electro-Acupuncture v Placebo	RR=2.81 (1.03, 7.66)	381		OR = 2.96 (1.04, 8.39)	↑	OR = 3.48		?	Berman (2004)

*Various definitions of responder used by different studies:

Sangdee Criteria: # of paracetamol tablets less than baseline or less than 14/week AND 4 of following 5 criteria met: VAS, WOMAC, Lequesne's Index improved by 50%, and orthopedist's or patient's overall opinion of change was better or much better.

Berman and Foster Criteria = OMERACT/OARSI Criteria: either: i) a reduction of more than or equal to 50% from baseline and an absolute reduction of more than or equal to 20 either in OA pain intensity (100 mm VAS) or WOMAC™ Difficulty in Performing Daily Activities (DPDA) subscale score (rescaled to 0 – 100); or ii) a reduction of more than or equal to 20% from baseline and an absolute reduction of more than or equal to 10 in at least two of the following variables: OA pain intensity (100 mm VAS), WOMAC™ DPDA subscale score (rescaled to 0 – 100) or patient's global assessment of disease activity (100 mm VAS).

Scharf Criteria: Decrease of 36% in WOMAC scores

Witt Criteria: Decrease of 50% in WOMAC Total score

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
WOMAC Pain	4 weeks	Electro-Acupuncture v Education Control	1.5 (0.6, 2.3)	297	d = 0.42 (0.18, 0.65)		↑	d = 0.33	d = 0.39	●	Berman (2004)
	4 weeks	Electro-Acupuncture v Usual Care	3.2 (1.6, 4.8)	73	d = 0.92 (0.44, 1.41)		↑	d = 0.66	d = 0.39	○	Berman (1999)
	5 weeks	Electro-Acupuncture v Wait List Control	8.3 (4.8, 11.8)	20	d = 2.07 (0.96, 3.18)		↑	d = 1.32	d = 0.39	○	Tukmachi (2004)
	6 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.5 (-0.6, 1.6)	218	d = 0.12 (-0.15, 0.38)		ns	d = 0.38	d = 0.39	●	Foster (2007)
	8 weeks	Electro-Acupuncture v Education Control	2.0 (1.2, 2.8)	294	d = 0.56 (0.33, 0.8)		↑	d = 0.33	d = 0.39	●	Berman (2004)
	8 weeks	Electro-Acupuncture v Usual Care	4.1 (2.5, 5.8)	73	d = 1.15 (0.65, 1.64)		↑	d = 0.66	d = 0.39	○	Berman (1999)
	8 weeks	Manual Acupuncture v Wait List Control	20.5 (15.6, 25.4)	212	d = 1.21 (0.9, 1.52)		↑	d = 0.42	d = 0.39	○	Witt (2005)
	12 weeks	Electro-Acupuncture v Usual Care	4.0 (2.5, 5.4)	73	d = 1.22 (0.72, 1.72)		↑	d = 0.66	d = 0.39	○	Berman (1999)
	13 weeks	Manual Acupuncture v Usual Care	1.3 (0.9, 1.7)	642	d = 0.55 (0.4, 0.71)		↑	d = 0.22	d = 0.39	●	Scharf (2006)
	13 weeks	Manual Acupuncture v Wait List Control	16.7 (13.4, 20)	463	d = 0.91 (0.72, 1.11)		↑	d = 0.26	d = 0.39	●	Witt (2006)
	14 weeks	Electro-Acupuncture v Education Control	2.2 (1.3, 3.0)	271	d = 0.62 (0.37, 0.86)		↑	d = 0.35	d = 0.39	●	Berman (2004)
	26 weeks	Electro-Acupuncture v Education Control	2.2 (1.3, 3.1)	250	d = 0.62 (0.36, 0.87)		↑	d = 0.36	d = 0.39	●	Berman (2004)
	26 weeks	Manual Acupuncture v Usual Care	1.1 (0.7, 1.5)	642	d = 0.46 (0.3, 0.62)		↑	d = 0.22	d = 0.39	●	Scharf (2006)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.3 (-1.5, 0.9)	213	d = -0.07 (-0.33, 0.2)		ns	d = 0.39	d = 0.39	●	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.6 (-1.9, 0.8)	197	d = -0.12 (-0.4, 0.16)		ns	d = 0.40	d = 0.39	○	Foster (2007)
VAS Pain	5 weeks	Electro-Acupuncture v Wait List Control	5.2 (3.09, 7.31)	20	d = 2.16 (1.04, 3.29)		↑	d = 1.32	d = 1.23	○	Tukmachi (2004)
Numerical Rating Scale (NRS)	2 weeks	Electro-Acupuncture v Usual Care	1.0 (-0.2, 2.2)	16	d = 0.82 (-0.21, 1.85)		ns	d = 1.51		?	Ng (2003)
	4 weeks	Electro-Acupuncture v Usual Care	0.7 (-0.8, 2.2)	16	d = 0.46 (-0.54, 1.45)		ns	d = 1.51		?	Ng (2003)
Pain Intensity (NRS)	2 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.64 (0.05, 1.23)	224	d = 0.28 (0.02, 0.55)		↑	d = 0.37		?	Foster (2007)
	6 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.51 (-0.09, 1.11)	218	d = 0.23 (-0.04, 0.49)		ns	d = 0.38		?	Foster (2007)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.07 (-0.68, 0.54)	213	d = -0.03 (-0.3, 0.24)		ns	d = 0.39		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.01 (-0.64, 0.62)	197	d = 0 (-0.28, 0.27)		ns	d = 0.40		?	Foster (2007)
Pain Unpleasantness (NRS)	6 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.43 (-0.19, 1.05)	218	d = 0.18 (-0.08, 0.45)		ns	d = 0.38		?	Foster (2007)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.12 (-0.76, 0.52)	213	d = -0.05 (-0.32, 0.22)		ns	d = 0.39		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.06 (-0.6, 0.72)	197	d = 0.03 (-0.25, 0.3)		ns	d = 0.40		?	Foster (2007)
Pain affective (SES)	8 weeks	Manual Acupuncture v Wait List Control	3.5 (0.94, 6.06)	212	d = 0.37 (0.08, 0.66)		↑	d = 0.42		?	Witt (2005)
Pain sensoric (SES)	8 weeks	Manual Acupuncture v Wait List Control	2.5 (-0.06, 5.06)	212	d = 0.26 (-0.03, 0.55)		ns	d = 0.42		?	Witt (2005)
Pain Disability Index	8 weeks	Manual Acupuncture v Wait List Control	11 (8.09, 13.91)	212	d = 1.02 (0.71, 1.32)		↑	d = 0.42		?	Witt (2005)

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
Lequesne Index	4 weeks	Electro-Acupuncture v Usual Care	2.48 (0.83, 4.13)	73	d = 0.69 (0.22, 1.16)		↑	d = 0.66		?	Berman (1999)
	8 weeks	Electro-Acupuncture v Usual Care	3.73 (2, 5.46)	73	d = 0.99 (0.51, 1.48)		↑	d = 0.66		?	Berman (1999)
	12 weeks	Electro-Acupuncture v Usual Care	3.07 (1.33, 4.81)	73	d = 0.81 (0.33, 1.29)		↑	d = 0.66		?	Berman (1999)
WOMAC Stiffness	5 weeks	Electro-Acupuncture v Wait List Control	3.5 (2.22, 4.78)	20	d = 2.4 (1.22, 3.58)		↑	d = 1.32	d = 0.39	○	Tukmachi (2004)
	8 weeks	Manual Acupuncture v Wait List Control	22.3 (18.05, 26.55)	212	d = 1.42 (1.1, 1.74)		↑	d = 0.42	d = 0.39	○	Witt (2005)
	13 weeks	Manual Acupuncture v Usual Care	1.1 (0.69, 1.51)	642	d = 0.42 (0.26, 0.58)		↑	d = 0.22	d = 0.39	●	Scharf (2006)
	13 weeks	Manual Acupuncture v Wait List Control	16.6 (12.72, 20.48)	463	d = 0.78 (0.59, 0.97)		↑	d = 0.26	d = 0.39	●	Witt (2006)
	26 weeks	Manual Acupuncture v Usual Care	1.2 (0.79, 1.61)	642	d = 0.46 (0.3, 0.61)		↑	d = 0.22	d = 0.39	●	Scharf (2006)
WOMAC Function	4 weeks	Electro-Acupuncture v Education Control	4.08 (1.33, 6.83)	297	d = 0.34 (0.11, 0.57)		↑	d = 0.33	d = 0.37	●	Berman (2004)
	4 weeks	Electro-Acupuncture v Usual Care	12 (6.62, 17.38)	73	d = 1.03 (0.54, 1.52)		↑	d = 0.66	d = 0.37	○	Berman (1999)
	6 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.04 (-3.95, 3.87)	218	d = 0 (-0.27, 0.26)		ns	d = 0.38	d = 0.37	○	Foster (2007)
	8 weeks	Electro-Acupuncture v Education Control	6.64 (3.88, 9.4)	294	d = 0.56 (0.32, 0.79)		↑	d = 0.33	d = 0.37	●	Berman (2004)
	8 weeks	Electro-Acupuncture v Usual Care	15.83 (10.32, 21.34)	73	d = 1.32 (0.82, 1.83)		↑	d = 0.66	d = 0.37	○	Berman (1999)
	8 weeks	Manual Acupuncture v Wait List Control	23.4 (19.73, 27.07)	212	d = 1.73 (1.39, 2.06)		↑	d = 0.42	d = 0.37	○	Witt (2005)
	12 weeks	Electro-Acupuncture v Usual Care	13.61 (7.9, 19.32)	73	d = 1.1 (0.6, 1.59)		↑	d = 0.66	d = 0.37	○	Berman (1999)
	13 weeks	Manual Acupuncture v Usual Care	1.4 (1.03, 1.77)	642	d = 0.58 (0.43, 0.74)		↑	d = 0.22	d = 0.37	●	Scharf (2006)
	13 weeks	Manual Acupuncture v Wait List Control	15.3 (12.11, 18.49)	463	d = 0.87 (0.68, 1.07)		↑	d = 0.26	d = 0.37	●	Witt (2006)
	14 weeks	Electro-Acupuncture v Education Control	7.73 (4.85, 10.61)	271	d = 0.65 (0.4, 0.89)		↑	d = 0.35	d = 0.37	●	Berman (2004)
	26 weeks	Electro-Acupuncture v Education Control	6.42 (3.44, 9.4)	250	d = 0.54 (0.28, 0.79)		↑	d = 0.36	d = 0.37	●	Berman (2004)
	26 weeks	Manual Acupuncture v Usual Care	1.2 (0.83, 1.57)	642	d = 0.5 (0.34, 0.66)		↑	d = 0.22	d = 0.37	●	Scharf (2006)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.57 (-4.86, 3.72)	213	d = -0.04 (-0.31, 0.24)		ns	d = 0.39	d = 0.37	○	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	-0.67 (-5.18, 3.84)	197	d = -0.04 (-0.32, 0.24)		ns	d = 0.40	d = 0.37	○	Foster (2007)
50-m Walk Time	2 weeks	Manual Acupuncture v Wait List Control	20.5 (5.3, 35.7)	29	d = 0.96 (0.19, 1.73)		↑	d = 1.08		?	Christensen(1992)
	6 weeks	Manual Acupuncture v Wait List Control	19.55 (5.9, 33.2)	29	d = 1.03 (0.25, 1.81)		↑	d = 1.08		?	Christensen(1992)
6-min Walk Distance	8 weeks	Electro-Acupuncture v Education Control	97.1 (22.81, 171.39)	294	d = 0.3 (0.07, 0.53)		↑	d = 0.33		?	Berman (2004)
	26 weeks	Electro-Acupuncture v Education Control	109.8 (29.38, 190.22)	250	d = 0.34 (0.09, 0.59)		↑	d = 0.36		?	Berman (2004)
Climb 20 Stairs Time	2 weeks	Manual Acupuncture v Wait List Control	14.4 (4.92, 23.88)	29	d = 1.09 (0.31, 1.88)		↑	d = 1.08		?	Christensen(1992)
	6 weeks	Manual Acupuncture v Wait List Control	12.5 (2.75, 22.25)	29	d = 0.93 (0.16, 1.69)		↑	d = 1.08		?	Christensen(1992)

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
Main Functional Problem Severity (NRS)	6 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.49 (-0.07, 1.05)	218	d = 0.23 (-0.03, 0.5)		ns	d = 0.38		?	Foster (2007)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.1 (-0.47, 0.67)	213	d = 0.05 (-0.22, 0.32)		ns	d = 0.39		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	0.24 (-0.35, 0.83)	197	d = 0.11 (-0.17, 0.39)		ns	d = 0.40		?	Foster (2007)
Timed Up and Go	2 weeks	Electro-Acupuncture v Usual Care	1.37 (0.54, 2.2)	16	d = 1.62 (0.47, 2.76)		↑	d = 1.51		?	Ng (2003)
	4 weeks	Electro-Acupuncture v Usual Care	1.15 (0.34, 1.96)	16	d = 1.38 (0.28, 2.49)		↑	d = 1.51		?	Ng (2003)
SF-12 Physical Scale	13 weeks	Manual Acupuncture v Usual Care	3.7 (1.26, 6.14)	642	d = 0.23 (0.08, 0.39)		↑	d = 0.22		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Usual Care	3.8 (1.36, 6.24)	642	d = 0.24 (0.09, 0.4)		↑	d = 0.22		?	Scharf (2006)
SF-36 Physical Health Score	8 weeks	Electro-Acupuncture v Education Control	7.51 (2.91, 12.11)	294	d = 0.37 (0.14, 0.61)		↑	d = 0.33		?	Berman (2004)
	8 weeks	Manual Acupuncture v Wait List Control	4.4 (2, 6.8)	212	d = 0.5 (0.2, 0.79)		↑	d = 0.42		?	Witt (2005)
	13 weeks	Manual Acupuncture v Wait List Control	5.4 (4.01, 6.79)	463	d = 0.71 (0.52, 0.9)		↑	d = 0.26		?	Witt (2006)
	26 weeks	Electro-Acupuncture v Education Control	9.31 (4.33, 14.29)	250	d = 0.46 (0.21, 0.72)		↑	d = 0.36		?	Berman (2004)
Depression (ADS)	8 weeks	Manual Acupuncture v Wait List Control	1.5 (-1.2, 4.2)	212	d = 0.15 (-0.14, 0.44)		ns	d = 0.42		?	Witt (2005)
SF-12 Mental Scale	13 weeks	Manual Acupuncture v Usual Care	-0.2 (-4.65, 4.25)	642	d = -0.01 (-0.16, 0.15)		ns	d = 0.22		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Usual Care	-1.2 (-5.65, 3.25)	642	d = -0.04 (-0.2, 0.11)		ns	d = 0.22		?	Scharf (2006)
SF-36 Mental Health Score	8 weeks	Manual Acupuncture v Wait List Control	2.9 (0.34, 5.46)	212	d = 0.3 (0.01, 0.6)		↑	d = 0.42		?	Witt (2005)
	13 weeks	Manual Acupuncture v Wait List Control	1.7 (0.04, 3.36)	597	d = 0.19 (0, 0.37)		↑	d = 0.23		?	Witt (2006)
WOMAC Total	4 weeks	Electro-Acupuncture v Usual Care	16.69 (9.36, 24.02)	73	d = 1.05 (0.56, 1.54)		↑	d = 0.66	d = 0.40	○	Berman (1999)
	8 weeks	Electro-Acupuncture v Usual Care	22.03 (14.53, 29.53)	73	d = 1.35 (0.84, 1.86)		↑	d = 0.66	d = 0.40	○	Berman (1999)
	8 weeks	Manual Acupuncture v Wait List Control	22.7 (19.09, 26.31)	212	d = 1.69 (1.35, 2.02)		↑	d = 0.42	d = 0.40	○	Witt (2005)
	12 weeks	Electro-Acupuncture v Usual Care	18.85 (11.35, 26.35)	73	d = 1.16 (0.66, 1.65)		↑	d = 0.66	d = 0.40	○	Berman (1999)
	13 weeks	Manual Acupuncture v Usual Care	1.3 (0.75, 1.85)	642	d = 0.36 (0.21, 0.52)		↑	d = 0.22	d = 0.40	●	Scharf (2006)
	13 weeks	Manual Acupuncture v Wait List Control	15.7 (12.65, 18.75)	463	d = 0.94 (0.75, 1.13)		↑	d = 0.26	d = 0.40	●	Witt (2006)
	26 weeks	Manual Acupuncture v Usual Care	1.2 (0.65, 1.75)	642	d = 0.33 (0.18, 0.49)		↑	d = 0.22	d = 0.40	●	Scharf (2006)
Patient Global Assessment	4 weeks	Electro-Acupuncture v Education Control	0.07 (-0.14, 0.28)	297	d = 0.07 (-0.16, 0.31)		ns	d = 0.33		?	Berman (2004)
	8 weeks	Electro-Acupuncture v Education Control	0.27 (0.06, 0.48)	294	d = 0.29 (0.06, 0.52)		↑	d = 0.33		?	Berman (2004)
	14 weeks	Electro-Acupuncture v Education Control	0.22 (0, 0.44)	271	d = 0.24 (-0.01, 0.48)		ns	d = 0.35		?	Berman (2004)
	26 weeks	Electro-Acupuncture v Education Control	0.24 (0.01, 0.47)	250	d = 0.26 (0.01, 0.51)		↑	d = 0.36		?	Berman (2004)
Patient Global Assessment (binary)	13 weeks	Manual Acupuncture v Usual Care	RR=1.49 (1.29, 1.72)	642		OR = 2.51 (1.82, 3.46)	↑	OR = 1.39		?	Scharf (2006)
	26 weeks	Manual Acupuncture v Usual Care	RR=1.57 (1.37, 1.80)	642		OR = 2.99 (2.16, 4.15)	↑	OR = 1.59		?	Scharf (2006)

Evidence Table 17. Results from Acupuncture Studies (AAOS Analysis)

Outcomes	Duration	Comparison	Mean Difference	n	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Study
Responders*	6 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	RR=1.20 (0.95, 1.52)	228		OR = 1.54 (0.90, 2.64)	ns	OR = 2.16		?	Foster (2007)
	8 weeks	Manual Acupuncture v Wait List Control	RR=17.3 (4.4, 68.5)	212		OR = 34.8 (8.2, 147.6)	↑	OR = 5.41		?	Witt (2005)
	13 weeks	Manual Acupuncture v Usual Care	RR=1.92 (1.55, 2.36)	642		OR = 2.89 (2.08, 4.02)	↑	OR = 2.32		?	Scharf (2006)
	26 weeks	Electro-Acupuncture v Education Control	RR=1.76 (1.35, 2.30)	360		OR = 2.61 (1.69, 4.03)	↑	OR = 3.41		?	Berman (2004)
	26 weeks	Manual Acupuncture v Usual Care	RR=1.82 (1.49, 2.23)	642		OR = 2.75 (1.99, 3.81)	↑	OR = 1.39		?	Scharf (2006)
	26 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	RR=1.18 (0.88, 1.57)	214		OR = 1.36 (0.79, 2.33)	ns	OR = 2.17		?	Foster (2007)
	52 weeks	Manual Acupuncture, Advice + Exercise v Advice + Exercise	RR=1.08 (0.82, 1.43)	200		OR = 1.17 (0.67, 2.04)	ns	OR = 2.21		?	Foster (2007)
Range of Motion	2 weeks	Electro-Acupuncture v Usual Care	21 (-1.14, 43.14)	16	d = 0.93 (-0.11, 1.97)		ns	d = 1.51		?	Ng (2003)
	4 weeks	Electro-Acupuncture v Usual Care	20.3 (-1.46, 42.06)	16	d = 0.91 (-0.12, 1.95)		ns	d = 1.51		?	Ng (2003)
Adverse Events	26 weeks	Manual Acupuncture v Usual Care	RR=0.91 (0.71, 1.16)	642		OR = 0.87 (0.62, 1.23)	ns	OR = 1.59		?	Scharf (2006)
Serious Adverse Events	26 weeks	Manual Acupuncture v Usual Care	RR=1.21 (0.64, 2.30)	642		OR = 1.23 (0.62, 2.41)	ns	OR = 2.32		?	Scharf (2006)
	26 weeks	Electro-Acupuncture v Education Control	RR=1.99 (0.82, 4.82)	379		OR = 2.07 (0.82, 5.25)	ns	OR = 3.23		?	Berman (2004)

*Various definitions of responder used by different studies:

Sangdee Criteria: # of paracetamol tablets less than baseline or less than 14/week AND 4 of following 5 criteria met: VAS, WOMAC, Lequesne's Index improved by 50%, and orthopedist's or patient's overall opinion of change was better or much better.

Berman and Foster Criteria = OMERACT/OARSI Criteria: either: i) a reduction of more than or equal to 50% from baseline and an absolute reduction of more than or equal to 20 either in OA pain intensity (100 mm VAS) or WOMAC™ Difficulty in Performing Daily Activities (DPDA) subscale score (rescaled to 0 – 100); or ii) a reduction of more than or equal to 20% from baseline and an absolute reduction of more than or equal to 10 in at least two of the following variables: OA pain intensity (100 mm VAS), WOMAC™ DPDA subscale score (rescaled to 0 – 100) or patient's global assessment of disease activity (100 mm VAS).

Scharf Criteria: Decrease of 36% in WOMAC scores

Witt Criteria: Decrease of 50% in WOMAC Total score

Evidence Table 18. Primary Studies Included in Intra-articular Corticosteroids Systematic Reviews*

<u>Author</u>	<u>Title</u>
Raynauld, et al. 2003	Safety and efficacy of long-term intraarticular steroid injections in osteoarthritis of the knee: a randomized, double-blind, placebo-controlled trial
Smith, et al. 2003	A randomized placebo-controlled trial of arthroscopic lavage versus lavage plus intra-articular corticosteroids in the management of symptomatic osteoarthritis of the knee
Young, et al. 2001	Effects of intraarticular glucocorticoids on macrophage infiltration and mediators of joint damage in osteoarthritis synovial membranes: findings in a double-blind, placebo-controlled study
Ravaud, et al. 1999	Effects of joint lavage and steroid injection in patients with osteoarthritis of the knee: results of a multicenter, randomized, controlled trial
Jones, et al. 1996	Intra-articular corticosteroids are effective in osteoarthritis but there are no clinical predictors of response
Gaffney, et al. 1995	Intra-articular triamcinolone hexacetonide in knee osteoarthritis: factors influencing the clinical response
Popov, et al. 1989	[Treatment of patients with gonarthrosis by intra-articular administration of drugs]
Dieppe, et al. 1980	Intra-articular steroids in osteoarthritis
Friedman, et al. 1980	The efficacy of intraarticular steroids in osteoarthritis: a double-blind study
Cederlof, et al. 1966	Intraarticular prednisolone injection for osteoarthritis of the knee. A double blind test with placebo
Wright, et al. 1960	Intra-articular therapy in osteo-arthritis; comparison of hydrocortisone acetate and hydrocortisone tertiary-butylacetate
Miller, et al. 1958	The value of intra-articular injections in osteoarthritis of the knee.

*Bjordal, et al; Bellamy, et al; Arroll, et al

ABBREVIATIONS USED IN ANALYSIS/RESULTS TABLES

ES(c) = Effect Size calculated (from raw data)

OR(c) = Odds Ratio calculated (from raw data)

Statistical Significance = determined by calculated Effect Size “ES(c)”

ns No statistically significant difference was detected between groups

↑ Statistically significant difference in favor of treatment of interest

↓ Statistically significant difference in favor of other treatment

ES(md) = minimum detectable effect size (two-tailed, $\alpha = 0.05$, $1-\beta = 0.80$)

MCII = Minimal Clinically Important Improvement

Power = powered to detect the MCII

- Powered to detect MCII
- Not powered to detect MCII
- ? Unable to determine if powered to detect MCII

MISCELLANEOUS ABBREVIATIONS

NR = not reported

n/a = not applicable

RCT = randomized controlled trial

ES = Effect Size

MD = Mean difference

SMD = Standardized mean difference

WMD = Weighted mean difference

RR = Relative Risk

OR = Odds Ratio

d = Cohen's *d*

0.2 = small effect

0.5 = moderate effect

0.8 = large effect

Evidence Table 19. Analysis of Intra-Articular Corticosteroids Systematic Reviews

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Systematic Review
Pain (VAS)	1 week	steroid injection vs. placebo	WMD = -21.91 (-29.93, -13.89)	3 RCT // n = 161	<i>d</i> = 0.85 (0.52, 1.17)		↑	<i>n/a</i> *	<i>d</i> = 1.23	?	Bellamy, et al 2006
	1-2 weeks	steroid injection vs. placebo	WMD = 14.5 (9.7, 19.2)	6 RCT // n = 221(active)			↑	<i>n/a</i> *	<i>d</i> = 1.23	?	Bjordal, et al 2007
	2 weeks	steroid injection vs. placebo	WMD = -16.47 (-22.92, -10.03)	5 RCT // n = 283	<i>d</i> = 0.56 (0.32, 0.80)		↑	<i>n/a</i> *	<i>d</i> = 1.23	?	Arroll, et al 2004
	4 weeks	steroid injection vs. placebo	WMD = 6.7 (0.4, 13.0)	6 RCT // n = 221(active)			↑	<i>n/a</i> *	<i>d</i> = 1.23	?	Bjordal, et al 2007
	4 weeks	steroid injection vs. placebo	WMD = -11.20 (-25.49, 3.09)	1 RCT // n = 53	<i>d</i> = 0.42 (-0.12, 0.97)		ns	<i>d</i> = 0.79	<i>d</i> = 1.23	●	Bellamy, et al 2006
	6 weeks	steroid injection vs. placebo	WMD = 5.6 (-4.4, 15.6)	2 RCT // n = 54 (active)			ns	<i>n/a</i> *	<i>d</i> = 1.23	?	Bjordal, et al 2007
	6 weeks	steroid injection vs. placebo	WMD = -7.10 (-18.39, 4.19)	1 RCT // n = 84	<i>d</i> = 0.27 (-0.16, 0.70)		ns	<i>d</i> = 0.62	<i>d</i> = 1.23	●	Bellamy, et al 2006
	8-12 weeks	steroid injection vs. placebo	WMD = 5.5 (0.8, 10.2)	4 RCT // n = 167 (active)			↑	<i>n/a</i> *	<i>d</i> = 1.23	?	Bjordal, et al 2007
	12 weeks	steroid injection vs. placebo	WMD = -14.20 (-27.44, -0.96)	1 RCT // n = 53	<i>d</i> = 0.59 (-0.03, 1.14)		↑	<i>d</i> = 0.79	<i>d</i> = 1.23	●	Bellamy, et al 2006
	24 weeks	steroid injection vs. placebo	WMD = -7.30 (-22.61, 8.01)	1 RCT // n = 53	<i>d</i> = 0.26 (-0.28, 0.80)		ns	<i>d</i> = 0.79	<i>d</i> = 1.23	●	Bellamy, et al 2006
> 15% decrease in pain (VAS)	3 weeks	steroid injection vs. placebo	RR = 3.11 (1.61, 6.01)	1 RCT // n = 118		OR = 5.02 (2.09, 12.03)	↑	OR > 3.32		?	Bellamy, et al 2006
> 30% decrease in pain (VAS)	1 week	steroid injection vs. placebo	RR = 2.56 (1.26, 5.18)	1 RCT // n = 53		OR = 5.33 (1.64, 17.4)	↑	OR > 4.73		?	Bellamy, et al 2006
	4 weeks	steroid injection vs. placebo	RR = 1.96 (0.99, 3.87)	1 RCT // n = 53		OR = 3.18 (1.01, 9.93)	ns	OR > 4.70		?	Bellamy, et al 2006
	12 weeks	steroid injection vs. placebo	RR = 1.82 (0.91, 3.65)	1 RCT // n = 53		OR = 2.71 (0.87, 8.43)	ns	OR > 4.70		?	Bellamy, et al 2006
	24 weeks	steroid injection vs. placebo	RR = 2.24 (0.99, 5.08)	1 RCT // n = 53		OR = 3.39 (1.02, 11.19)	ns	OR > 4.86		?	Bellamy, et al 2006
Pain at night (VAS)	52 weeks	steroid injection vs. placebo	WMD = -10.30 (-22.98, 2.38)	1 RCT // n = 66	<i>d</i> = 0.39 (-0.10, 0.88)		ns	<i>d</i> = 0.70	<i>d</i> = 1.23	●	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = 1.20 (-11.48, 13.88)	1 RCT // n = 66	<i>d</i> = -0.05 (-0.53, 0.44)		ns	<i>d</i> = 0.70	<i>d</i> = 1.23	●	Bellamy, et al 2006
Patient reports pain reduction	1 week	steroid injection vs. placebo	RR = 1.25 (0.88, 1.78)	1 RCT // n = 34		OR = 3.13 (0.51, 19.04)	ns	OR > 1000		?	Bellamy, et al 2006
	8 weeks	steroid injection vs. placebo	RR = 1.00 (0.61, 1.64)	1 RCT // n = 34		OR = 1.00 (0.25, 4.08)	ns	OR > 28.31		?	Bellamy, et al 2006
WOMAC Pain	52 weeks	steroid injection vs. placebo	WMD = -13.80 (-26.79, -0.81)	1 RCT // n = 66	<i>d</i> = 0.51 (0.02, 1.00)		↑	<i>d</i> = 0.70	<i>d</i> = 0.39	○	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = -5.20 (-18.19, 7.79)	1 RCT // n = 66	<i>d</i> = 0.19 (-0.29, 0.68)		ns	<i>d</i> = 0.70	<i>d</i> = 0.39	○	Bellamy, et al 2006
WOMAC Physical Function	52 weeks	steroid injection vs. placebo	WMD = -6.00 (-17.77, 5.77)	1 RCT // n = 66	<i>d</i> = 0.25 (-0.24, 0.73)		ns	<i>d</i> = 0.70	<i>d</i> = 0.37	○	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = -4.20 (-15.97, 7.57)	1 RCT // n = 66	<i>d</i> = 0.17 (-0.31, 0.66)		ns	<i>d</i> = 0.70	<i>d</i> = 0.37	○	Bellamy, et al 2006
WOMAC stiffness	52 weeks	steroid injection vs. placebo	WMD = -6.70 (-22.70, 9.30)	1 RCT // n = 66	<i>d</i> = 0.20 (-0.28, 0.69)		ns	<i>d</i> = 0.70	<i>d</i> = 0.39	○	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = -8.60 (-24.60, 7.40)	1 RCT // n = 66	<i>d</i> = 0.26 (-0.23, 0.74)		ns	<i>d</i> = 0.70	<i>d</i> = 0.39	○	Bellamy, et al 2006
WOMAC total	52 weeks	steroid injection vs. placebo	WMD = -7.80 (-20.28, 4.68)	1 RCT // n = 66	<i>d</i> = 0.30 (-0.18, 0.79)		ns	<i>d</i> = 0.70	<i>d</i> = 0.40	○	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = -4.60 (-17.08, 7.88)	1 RCT // n = 66	<i>d</i> = 0.18 (-0.31, 0.66)		ns	<i>d</i> = 0.70	<i>d</i> = 0.40	○	Bellamy, et al 2006
Patient global assessment (VAS)	1 week	steroid injection vs. placebo	WMD = -15.50 (-32.32, 1.32)	1 RCT // n = 53	<i>d</i> = 0.50 (-0.05, 1.04)		ns	<i>d</i> = 0.79	<i>d</i> = 1.00	●	Bellamy, et al 2006
	4 weeks	steroid injection vs. placebo	WMD = -12.90 (-29.51, 3.71)	1 RCT // n = 53	<i>d</i> = 0.42 (-0.13, 0.97)		ns	<i>d</i> = 0.79	<i>d</i> = 1.00	●	Bellamy, et al 2006
	12 weeks	steroid injection vs. placebo	WMD = -9.20 (-24.18, 5.78)	1 RCT // n = 53	<i>d</i> = 0.33 (-0.21, 0.88)		ns	<i>d</i> = 0.79	<i>d</i> = 1.00	●	Bellamy, et al 2006
	24 weeks	steroid injection vs. placebo	WMD = -3.70 (-20.47, 13.07)	1 RCT // n = 53	<i>d</i> = 0.12 (-0.42, 0.66)		ns	<i>d</i> = 0.79	<i>d</i> = 1.00	●	Bellamy, et al 2006

* Minimum detectable effect sizes were not calculated when studies were pooled

Evidence Table 19. Analysis of Intra-Articular Corticosteroids Systematic Reviews

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power	Systematic Review
Patient global assessment (VAS)	52 weeks	steroid injection vs. placebo	WMD = -0.40 (-14.16, 13.36)	1 RCT // n = 66	$d = 0.01$ (-0.47, 0.50)		ns	$d = 0.70$	$d = 1.00$	●	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = -1.10 (-14.86, 12.66)	1 RCT // n = 66	$d = 0.04$ (-0.44, 0.52)		ns	$d = 0.70$	$d = 1.00$	●	Bellamy, et al 2006
Function: Modified HAQ	1 week	steroid injection vs. placebo	WMD = -0.10 (-0.96, 0.76)	1 RCT // n = 84	$d = 0.05$ (-0.38, 0.48)		ns	$d = 0.62$?	Bellamy, et al 2006
	6 weeks	steroid injection vs. placebo	WMD = 0.30 (-0.62, 1.22)	1 RCT // n = 84	$d = -0.14$ (-0.57, 0.29)		ns	$d = 0.62$?	Bellamy, et al 2006
Lequense Index	1 week	steroid injection vs. placebo	WMD = -2.20 (-4.87, 0.47)	1 RCT // n = 33	$d = 0.44$ (-0.11, 0.99)		ns	$d = 0.79$?	Bellamy, et al 2006
	4 weeks	steroid injection vs. placebo	WMD = -2.30 (-4.67, 0.07)	1 RCT // n = 33	$d = 0.52$ (-0.03, 1.07)		ns	$d = 0.79$?	Bellamy, et al 2006
	12 weeks	steroid injection vs. placebo	WMD = -1.00 (-3.32, 1.32)	1 RCT // n = 33	$d = 0.23$ (-0.31, 0.77)		ns	$d = 0.79$?	Bellamy, et al 2006
	24 weeks	steroid injection vs. placebo	WMD = -1.20 (-3.58, 1.18)	1 RCT // n = 33	$d = 0.27$ (-0.27, 0.82)		ns	$d = 0.79$?	Bellamy, et al 2006
Range of Motion	52 weeks	steroid injection vs. placebo	WMD = -1.30 (-7.66, 5.06)	1 RCT // n = 66	$d = -0.10$ (-0.58, 0.38)		ns	$d = 0.70$?	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = 10.40 (4.04, 16.76)	1 RCT // n = 66	$d = 0.79$ (0.29, 1.29)		↑	$d = 0.70$?	Bellamy, et al 2006
Walking distance	1 week	steroid injection vs. placebo	WMD = 2.40 (-4.36, 9.16)	1 RCT // n = 84	$d = 0.15$ (-0.28, 0.58)		ns	$d = 0.62$?	Bellamy, et al 2006
	6 weeks	steroid injection vs. placebo	WMD = -0.80 (-7.20, 5.60)	1 RCT // n = 84	$d = -0.05$ (-0.48, 0.37)		ns	$d = 0.62$?	Bellamy, et al 2006
50 foot walking time	52 weeks	steroid injection vs. placebo	WMD = -0.20 (-1.62, 1.22)	1 RCT // n = 66	$d = -0.07$ (-0.55, 0.42)		ns	$d = 0.70$?	Bellamy, et al 2006
	104 weeks	steroid injection vs. placebo	WMD = -0.70 (-2.12, 0.72)	1 RCT // n = 66	$d = -0.24$ (-0.72, 0.25)		ns	$d = 0.70$?	Bellamy, et al 2006
Improvement	2 weeks	steroid injection vs. placebo	RR = 1.38 (0.79, 2.39)	1 RCT // n = 71 (HCA)		OR = 1.75 (0.68, 4.54)	ns	OR > 3.87		?	Bellamy, et al 2006
	2 weeks	steroid injection vs. placebo	RR = 1.81 (1.09, 3.00)	1 RCT // n = 71 (HCHTB)		OR = 3.37 (1.27, 8.93)	↑	OR > 3.87		?	Bellamy, et al 2006
Improvement of symptoms	2 weeks	steroid injection vs. placebo	RR = 1.66 (1.37, 2.01)	6 RCT // n = 317		OR = 3.72 (2.29, 6.02)	↑	n/a*		?	Arroll, et al 2004
	16-24 weeks	steroid injection vs. placebo	RR = 2.09 (1.20, 3.65)	2 RCT // n = 124		OR = 2.98 (1.35, 6.57)	↑	n/a*		?	Arroll, et al 2004
Patients improved (global)	1 week	steroid injection vs. placebo	RR = 1.44 (1.13, 1.82)	3 RCT // n = 158		OR = 2.98 (1.49, 5.97)	↑	n/a*		?	Bellamy, et al 2006
	3 weeks	steroid injection vs. placebo	RR = 0.91 (0.67, 1.24)	1 RCT // n = 51		OR = 0.68 (0.18, 2.51)	ns	OR < 0.19		?	Bellamy, et al 2006
	6 weeks	steroid injection vs. placebo	RR = 1.06 (0.86, 1.31)	2 RCT // n = 157		OR = 1.22 (0.61, 2.44)	ns	n/a*		?	Bellamy, et al 2006
	8 weeks	steroid injection vs. placebo	RR = 0.86 (0.60, 1.23)	1 RCT // n = 51		OR = 0.60 (0.18, 2.03)	ns	OR < 0.19		?	Bellamy, et al 2006
	6 months	steroid injection vs. placebo	RR = 0.94 (0.81, 1.09)	1 RCT // n = 68		OR = 0.47 (0.08, 2.75)	ns	OR < 0.20		?	Bellamy, et al 2006
Local discomfort	n/a	steroid injection vs. placebo	RR = 0.45 (0.10, 2.11)	1 RCT // n = 53		OR = 2.50 (0.44, 14.23)	ns	OR > 5.13		?	Bellamy, et al 2006
Patients prefer treatment (global)	n/a	steroid injection vs. placebo	RR = 2.22 (1.57, 3.15)	3 RCT // n = 190		OR = 4.65 (2.47, 8.76)	↑	n/a*		?	Bellamy, et al 2006
Post injection flare	n/a	steroid injection vs. placebo	RR = 0.80 (0.26, 2.48)	1 RCT // n = 34		OR = 1.35 (0.29, 6.26)	ns	OR > 7.01		?	Bellamy, et al 2006
Withdrawal	n/a	steroid injection vs. placebo	RR = 0.60 (0.25, 1.45)	2 RCT // n = 121		OR = 1.95 (0.63, 6.06)	ns	n/a*		?	Bellamy, et al 2006
Withdrawal due to lack of efficacy	n/a	steroid injection vs. placebo	RR = 0.61 (0.23, 1.65)	2 RCT // n = 122		OR = 1.40 (0.42, 4.61)	ns	n/a*		?	Bellamy, et al 2006

* Minimum detectable effect sizes were not calculated when studies were pooled

Evidence Table 20. Included Studies for Needle Lavage

<u>Author</u>	<u>Title</u>
Bradley, et al. 2002	Tidal irrigation as treatment for knee osteoarthritis: a sham-controlled, randomized, double-blinded evaluation
Chang, et al. 1993	A randomized, controlled trial of arthroscopic surgery versus closed-needle joint lavage for patients with osteoarthritis of the knee
Ike, et al. 1992	Tidal irrigation versus conservative medical management in patients with osteoarthritis of the knee: a prospective randomized study. Tidal Irrigation Cooperating Group
Dawes, et al. 1987	Saline washout for knee osteoarthritis: results of a controlled study

Evidence Table 21. Excluded Studies for Needle Lavage

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Bradley, et al. 2003	Joint irrigation as treatment for osteoarthritis	Review Article
Vad, et al. 2003	Management of knee osteoarthritis: knee lavage combined with hylan versus hylan alone	Not an RCT
Srinivasan, et al. 1995	The effects of joint washout and steroid injection compared with either joint washout or steroid injection alone in rheumatoid knee effusion	Incorrect Patient Population

ABBREVIATIONS USED IN ANALYSIS/RESULTS TABLES

ES(c) = Effect Size calculated (from raw data)

OR(c) = Odds Ratio calculated (from raw data)

Statistical Significance = determined by calculated Effect Size “ES(c)”

ns No statistically significant difference was detected between groups

↑ Statistically significant difference in favor of treatment of interest

↓ Statistically significant difference in favor of other treatment

ES(md) = minimum detectable effect size (two-tailed, $\alpha = 0.05$, $1-\beta = 0.80$)

MCII = Minimal Clinically Important Improvement

Power = powered to detect the MCII

- Powered to detect MCII
- Not powered to detect MCII
- ? Unable to determine if powered to detect MCII

MISCELLANEOUS ABBREVIATIONS

NR = not reported

n/a = not applicable

RCT = randomized controlled trial

ES = Effect Size

MD = Mean difference

SMD = Standardized mean difference

WMD = Weighted mean difference

RR = Relative Risk

OR = Odds Ratio

d = Cohen's *d*

0.2 = small effect

0.5 = moderate effect

0.8 = large effect

Evidence Table 22. Results from Needle Lavage Studies

Outcomes	Duration	Comparison	n	ES (c)	Statistical Significance	ES (md)	MCII	Power	Study
Pain: AIMS	3 month	debridment vs. closed-needle joint lavage	32	MD = -0.40 (-1.60, 0.80)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
	12 months	debridment vs. closed-needle joint lavage	32	MD = 0.30 (-1.10, 1.70)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
Pain: WOMAC	12 weeks	closed-needle joint lavage vs. sham surgery	178	<i>d</i> = 0.19 (-0.11, 0.48)	ns	<i>d</i> = 0.37	<i>d</i> = 0.39	●	Bradley, et al (2002)
	24 weeks	closed-needle joint lavage vs. sham surgery	176	<i>d</i> = 0.16 (-0.13, 0.46)	ns	<i>d</i> = 0.38	<i>d</i> = 0.39	●	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. sham surgery	177	<i>d</i> = 0.35 (0.06, 0.65)	↑	<i>d</i> = 0.38	<i>d</i> = 0.39	●	Bradley, et al (2002)
Pain: Walking	12 weeks	closed-needle lavage vs. sham surgery	20	<i>d</i> = -0.529 (-1.42, 0.36)**	ns	<i>d</i> = 1.32		?	Dawes, et al (1987)
Pain: At Night	12 weeks	closed-needle lavage vs. sham surgery	20	<i>d</i> = -0.50 (-1.39, 0.39)**	ns	<i>d</i> = 1.32		?	Dawes, et al (1987)
Pain: Resting	12 weeks	closed-needle lavage vs. sham surgery	20	<i>d</i> = -0.01 (-0.89, 0.87)**	ns	<i>d</i> = 1.32		?	Dawes, et al (1987)
Function: WOMAC	12 weeks	closed-needle joint lavage vs. arthroscopic lavage	178	<i>d</i> = 0.19 (-0.10, 0.49)	ns	<i>d</i> = 0.37	<i>d</i> = 0.37	●	Bradley, et al (2002)
	24 weeks	closed-needle joint lavage vs. arthroscopic lavage	176	<i>d</i> = 0.28 (-0.02, 0.57)	ns	<i>d</i> = 0.38	<i>d</i> = 0.37	○	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. arthroscopic lavage	177	<i>d</i> = 0.28 (-0.01, 0.58)	ns	<i>d</i> = 0.38	<i>d</i> = 0.37	○	Bradley, et al (2002)
Function: AIMS	3 months	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.50 (-1.20, 0.20)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
	12 months	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.30 (-1.10, 0.50)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
Physical activity: AIMS	3 month	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -1.30 (-3.00, 0.40)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
	12 months	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -1.40 (-3.30, 0.40)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
Social Activity: AIMS	3 month	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.40 (-1.40, 0.70)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
	12 months	closed-needle joint lavage vs. arthroscopic lavage	32	MD = 0.30 (-1.10, 1.50)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
Depressoin: AIMS	3 month	closed-needle joint lavage vs. arthroscopic lavage	32	MD = 0.20 (-0.80, 1.10)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
	12 months	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.80 (-1.60, 0.10)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
Anxiety: AIMS	3 month	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.10 (-1.30, 1.00)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)
	12 months	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.30 (-1.30, 0.60)	ns	<i>d</i> = 1.03		?	Chang, et al (1993)

* Some data from Ike et al. not shown as dispersion measurements were not provided for all measures.

**Standard deviation estimated from range.

Evidence Table 22. Results from Needle Lavage Studies

Outcomes	Duration	Comparison	n	ES (c)	Statistical Significance	ES (md)	MCII	Power	Study
50-foot walk time	12 weeks	closed-needle joint lavage vs. sham surgery	178	d = 0.34 (-0.26, 0.33)	ns	d = 0.37		?	Bradley, et al (2002)
	12 weeks	closed-needle joint lavage vs. control	57	d = -0.34 (-0.86, 0.18)	ns	d = 0.67		?	Ike, et al (1992)
	24 weeks	closed-needle joint lavage vs. sham surgery	176	d = 0.11 (-0.19, 0.40)	ns	d = 0.38		?	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. sham surgery	177	d = 0.22 (-0.08, 0.51)	ns	d = 0.38		?	Bradley, et al (2002)
50-foot walk time	3 month	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.80 (-2.80, 1.20)	ns	d = 1.03		?	Chang, et al (1993)
	12 months	closed-needle joint lavage vs. arthroscopic lavage	32	MD = -0.20 (-2.80, 2.30)	ns	d = 1.03		?	Chang, et al (1993)
25-Yard Walk Time	12 weeks	closed-needle lavage vs. sham surgery	20	d = 0.39 (-0.50, 1.27)**	ns	d = 1.32		?	Dawes, et al (1987)
Global Assessment: VAS	3 month	debridement vs. closed-needle joint lavage	32	MD = -0.20 (-10.60, 13.80)	ns	d = 1.03	d = 1.00	○	Chang, et al (1993)
	12 months	debridement vs. closed-needle joint lavage	32	MD = 0.80 (-5.30, 21.2)	ns	d = 1.03	d = 1.00	○	Chang, et al (1993)
Stiffness: WOMAC	12 weeks	closed-needle joint lavage vs. sham surgery	178	d = 0.15 (-0.15, 0.44)	ns	d = 0.37		?	Bradley, et al (2002)
	24 weeks	closed-needle joint lavage vs. sham surgery	176	d = 0.24 (-0.05, 0.54)	ns	d = 0.38		?	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. sham surgery	177	d = 0.29 (-0.01, 0.89)	ns	d = 0.38		?	Bradley, et al (2002)
Stiffness: Days Previous Week	12 weeks	closed-needle joint lavage vs. control	57	d = 0.49 (-0.03, 1.02)	ns	d = 0.67		?	Ike, et al (1992)
Quality of Well-Being (QWB)	24 weeks	closed-needle joint lavage vs. sham surgery	178	d = 0.31 (0.01, 0.60)	↑	d = 0.37		?	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. sham surgery	176	d = 0.36 (0.06, 0.66)	↑	d = 0.38		?	Bradley, et al (2002)
Acetaminophen use	12 weeks	closed-needle joint lavage vs. sham surgery	177	d = 0.05 (-0.24, 0.35)	ns	d = 0.38		?	Bradley, et al (2002)
	24 weeks	closed-needle joint lavage vs. sham surgery	178	d = 0.13 (-0.16, 0.43)	ns	d = 0.37		?	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. sham surgery	176	d = 0.25 (-0.05, 0.55)	ns	d = 0.38		?	Bradley, et al (2002)
Tenderness	12 weeks	closed-needle joint lavage vs. sham surgery	178	d = 0.05 (-0.25, 0.34)	ns	d = 0.37		?	Bradley, et al (2002)
	24 weeks	closed-needle joint lavage vs. sham surgery	176	d = 0.11 (-0.18, 0.41)	ns	d = 0.38		?	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. sham surgery	177	d = 0.06 (-0.24, 0.35)	ns	d = 0.38		?	Bradley, et al (2002)

* Some data from Ike et al. not shown as dispersion measurements were not provided for all measures.

**Standard deviation estimated from range.

Evidence Table 22. Results from Needle Lavage Studies

Outcomes	Duration	Comparison	n	ES (c)	Statistical Significance	ES (md)	MCII	Power	Study
Swelling	12 weeks	closed-needle joint lavage vs. sham surgery	178	d = -0.17 (-0.47, 0.12)	ns	d = 0.37		?	Bradley, et al (2002)
	24 weeks	closed-needle joint lavage vs. sham surgery	176	d = 0.08 (-0.22, 0.37)	ns	d = 0.38		?	Bradley, et al (2002)
	52 weeks	closed-needle joint lavage vs. sham surgery	177	d = 0.06 (-0.24, 0.35)	ns	d = 0.38		?	Bradley, et al (2002)
4-Stair Climb	12 weeks	closed-needle joint lavage vs. control	57	d = 0.01 (-0.51, 0.53)	ns	d = 0.67		?	Ike, et al (1992)
Range of Motion: Active	12 weeks	closed-needle joint lavage vs. arthroscopic lavage	57	d = 0.24 (-0.28, 0.76)	ns	d = 0.67		?	Ike, et al (1992)
	3 months	debridement vs. closed-needle joint lavage	32	MD = 3 (-6, 12)	ns	d = 1.03		?	Chang, et al (1993)
	12 months	debridement vs. closed-needle joint lavage	32	MD = 1 (-7, 10)	ns	d = 1.03		?	Chang, et al (1993)
Range of Motion: Passive	12 weeks	closed-needle joint lavage vs. control	57	d = 0.48 (-0.04, 1.01)	ns	d = 0.67		?	Ike, et al (1992)
Knee Flexion	12 weeks	closed-needle lavage vs. sham surgery	20	d = 0.26 (-0.62, 1.14)**	ns	d = 1.32		?	Dawes, et al (1987)

* Some data from Ike et al. not shown as dispersion measurements were not provided for all measures.

**Standard deviation estimated from range.

Evidence Table 23. Design and Quality for Needle Lavage Studies

† Was the funding for this study derived from a source that does not have financial interests in its results

● = Yes ○ = No
 x = Not Reported * = Unclear
 n/a = not applicable

Author	Outcome	Duration	N	Treatment(s)	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †
Ike, et al. 1992	Timed 50 ft. walking	baseline	77	Needle Lavage vs. Medical Management	n/a	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Timed 50 ft. walking	12 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Dawes, et al. 1987	Timed Walking	12 Weeks	20	Needle Lavage vs. Sham Needle Lavage	●	●	×	×	×	×	●	×	○	○	●	●	●	×

Evidence Table 23. Design and Quality for Needle Lavage Studies

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Author	Outcome	Duration	N	Treatment(s)	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †
Chang, et al. 1993	AIMS - Anxiety	3 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Anxiety	12 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Depression	3 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Depression	12 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Pain	3 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Pain	12 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Physical Activity	3 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	○	●	●	●	●
Chang, et al. 1993	AIMS - Physical Activity	12 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	○	●	●	●	●
Chang, et al. 1993	AIMS - Physical Function	3 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Physical Function	12 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Social Activity	3 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●
Chang, et al. 1993	AIMS - Social Activity	12 Months	32	Arthroscopic Surgery vs. Needle Lavage	●	●	○	●	○	○	●	×	●	●	●	●	●	●

Evidence Table 23. Design and Quality for Needle Lavage Studies

† Was the funding for this study derived from a source that does not have financial interests in its results

● = Yes ○ = No
 x = Not Reported * = Unclear
 n/a = not applicable

Author	Outcome	Duration	N	Treatment(s)	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †
Ike, et al. 1992	Pain - 50 ft. walking	baseline	77	Needle Lavage vs. Medical Management	n/a	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - 50 ft. walking	2 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - 50 ft. walking	4 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - 50 ft. walking	8 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - 50 ft. walking	12 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - After Stairs	baseline	77	Needle Lavage vs. Medical Management	n/a	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - After Stairs	2 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - After Stairs	4 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - After Stairs	8 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Ike, et al. 1992	Pain - After Stairs	12 Weeks	77	Needle Lavage vs. Medical Management	○	●	×	×	○	○	●	●	●	●	●	●	●	○
Dawes, et al. 1987	Pain at Night	12 Weeks	20	Needle Lavage vs. Sham Needle Lavage	●	●	×	×	×	×	●	×	○	○	●	●	●	×
Dawes, et al. 1987	Pain at Rest	12 Weeks	20	Needle Lavage vs. Sham Needle Lavage	●	●	×	×	×	×	●	×	○	○	●	●	●	×
Dawes, et al. 1987	Walking Pain	12 Weeks	20	Needle Lavage vs. Sham Needle Lavage	●	●	×	×	×	×	●	×	○	○	●	●	●	×

Evidence Table 24. Patient Characteristics from Needle Lavage Studies

<u>Author</u>	<u>Group/Treatment</u>	<u>Co-Interventions</u>	<u>Co-Morbidities</u>	<u>Adverse Events</u>	<u>Study Enrollement / Eligibility Criteria</u>	<u>Study Exclusion Criteria</u>
Bradley, et al. 2002	Needle Lavage	NR	NR	One subject reported redness at needle puncture site. On subject reported increased pain at six-month visit, and at the twelve-month visit opined that the study treatment had caused an increase in knee pain.	American college of Rheumatology clinical or clinical plus radiographic criteria of knee OA, 40 years or older, ambulatory functional state without assistance or assistive devices, knee pain for a year or more, knee pain on 14 or more of the last 28 days before enrollment, able to give informed consent.	Hypersensitivity to bupivacaine, lidocaine, or acetaminophen, significant trauma, surgery or intraarticular corticosteroid injection to the index knee within six months of enrollment, "secondary" causes of OA, conditions other than knee OA which limited lower extremity function, clinically evident anserine or trochanteric bursitis or diffuse soft tissue rheumatism at the time of enrollment, significant or serious medical conditions or use of anticoagulants. Pregnant or nursing women were also excluded.
	Sham Needle Lavage					
Chang, et al. 1993	Arthroscopic Surgery	NR	NR	NR	persistent knee pain min. 3 months, despite conservative medical and rehabilitation management, which restricted work, athletic, or self-care activities to an extent unacceptable to the patient; knee radiographs showing grades 1-3 changes (Kellgren and Lawrence); >20 years of age	knee surgery within prior 6 months; tka; any concurrent illness which would prevent intervention or influence measures; grade 4 changes
	Needle Lavage					
Ike, et al. 1992	Medical Management	NR	NR	No adverse effects were reported to arise from tidal knee irrigation procedure or from the various medications prescribed for arthritis pain	Ages 21 and older; satisfied College of Rheumatology OA knee criteria; certified inadequate pain control (i.e. failure of analgesics, IA steroid injections, etc.); symptomatic knees were of radiographic class I, II, or III; knee pain at rest or during motion; one of the following: swelling or effusion, heat, redness, tenderness on pressure.	definite anterior cruciate ligament disruption, meniscal tear or loose intraarticular bodies; lateral instability; septic arthritis; acute episodes of crystal induced arthritis; hip, ankle, foot or back problems that could interfere with knee pain assessment; psoriasis, syphilitic neuropathy, ochronosis or metabolic bone disease; refractory generalized OA; pregnancy or nursing; treatment with systemic or intraarticular glucocorticoids within the previous two months; knee surgery during previous six months; sever bilateral knee OA sufficient to confound assessment of treated knee; history of hypersensitivity or adverse reaction to amide-type anesthetics; doubtful reliability of patient to attend followup visits.
	Needle Lavage					
Dawes, et al. 1987	Needle Lavage	NR	NR	NR	Clinical and radiological evidence of knee OA with clinically detectable effusions	NR
	Sham Needle Lavage					

Evidence Table 25. Primary Studies Included in Arthroscopic Debridement Systematic Review (Laupattarakasem, et al)

<u>Author</u>	<u>Title</u>
Moseley, et al. 2002	A controlled trial of arthroscopic surgery for osteoarthritis of the knee
Hubbard, et al. 1996	Articular debridement versus washout for degeneration of the medial femoral condyle. A five-year study
Chang, et al. 1993	A randomized, controlled trial of arthroscopic surgery versus closed-needle joint lavage for patients with osteoarthritis of the knee

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OR(c) = Odds Ratio calculated (from raw data)

Statistical Significance = determined by calculated Effect Size “ES(c)”

ns No statistically significant difference was detected between groups

↑ Statistically significant difference in favor of treatment of interest

↓ Statistically significant difference in favor of other treatment

ES(md) = minimum detectable effect size (two-tailed, $\alpha = 0.05$, $1-\beta = 0.80$)

MCII = Minimal Clinically Important Improvement

Power = powered to detect the MCII

- Powered to detect MCII
- Not powered to detect MCII
- ? Unable to determine if powered to detect MCII

MISCELLANEOUS ABBREVIATIONS

NR = not reported

n/a = not applicable

RCT = randomized controlled trial

ES = Effect Size

MD = Mean difference

SMD = Standardized mean difference

WMD = Weighted mean difference

RR = Relative Risk

OR = Odds Ratio

d = Cohen's *d*

0.2 = small effect

0.5 = moderate effect

0.8 = large effect

Evidence Table 26. Analysis of Arthroscopic Debridement Systematic Review (Laupattarakasem, et al)

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power
Pain: KSPS scale	2 weeks	debridement vs lavage	WMD = 2.50 (-4.36, 9.36)	1 RCT // n = 118	d = -0.13 (-0.49, 0.23)		ns	d = 0.52		?
	6 weeks	debridement vs lavage	WMD = -1.90 (-9.81, 6.01)	1 RCT // n = 116	d = 0.09 (-0.28, 0.45)		ns	d = 0.52		?
	3 months	debridement vs lavage	WMD = -3.80 (-11.54, 3.94)	1 RCT // n = 114	d = 0.18 (-0.19, 0.54)		ns	d = 0.52		?
	6 months	debridement vs lavage	WMD = -3.20 (-11.17, 4.77)	1 RCT // n = 113	d = 0.18 (-0.22, 0.51)		ns	d = 0.53		?
	12 months	debridement vs lavage	WMD = -3.10 (-11.16, 4.96)	1 RCT // n = 103	d = 0.15 (-0.23, 0.53)		ns	d = 0.55		?
	18 months	debridement vs lavage	WMD = -0.40 (-9.54, 8.74)	1 RCT // n = 103	d = 0.02 (-0.36, 0.40)		ns	d = 0.55		?
	24 months	debridement vs lavage	WMD = -2.30 (-11.15, 6.55)	1 RCT // n = 108	d = 0.10 (-0.28, 0.48)		ns	d = 0.54		?
	2 weeks	placebo vs debridement	WMD = 8.0 (1.65, 15.75)	1 RCT // n = 118	d = 0.13 (-0.24, 0.50)		↑	d = 0.52		?
	6 weeks	placebo vs debridement	WMD = 3.60 (-4.53, 11.73)	1 RCT // n = 116	d = 0.10 (-0.27, 0.47)		ns	d = 0.53		?
	3 months	placebo vs debridement	WMD = 0.50 (-7.49, 8.49)	1 RCT // n = 117	d = 0.04 (-0.34, 0.41)		ns	d = 0.54		?
	6 months	placebo vs debridement	WMD = 2.40 (-5.29, 10.09)	1 RCT // n = 115	d = 0.02 (-0.36, 0.40)		ns	d = 0.55		?
	12 months	placebo vs debridement	WMD = 2.80 (-5.76, 11.36)	1 RCT // n = 107	d = 0.11 (-0.28, 0.50)		ns	d = 0.56		?
	18 months	placebo vs debridement	WMD = -1.70 (-10.93, 7.53)	1 RCT // n = 107	d = 0.08 (-0.33, 0.49)		ns	d = 0.59		?
	24 months	placebo vs debridement	WMD = -0.20 (-9.05, 8.65)	1 RCT // n = 108	d = -0.03 (-0.44, 0.38)		ns	d = 0.59		?
Pain: AIMS Scale	3 months	debridement vs lavage	MD = -0.40 (0.61)	1 RCT	n/a		ns	n/a		?
	12 months	debridement vs lavage	MD = 0.30 (0.71)	1 RCT	n/a		ns	n/a		?

Evidence Table 26. Analysis of Arthroscopic Debridement Systematic Review (Laupattarakasem, et al)

Outcomes	Duration	Systematic Review Comparison	Systematic Review Result	Source	ES (c)	OR (c)	Statistical Significance	ES (md)	MCII	Power
Function: AIMS scale	2 weeks	debridement vs lavage	WMD = 3.00 (-5.67, 11.67)	1 RCT // n = 114	d = -0.45 (-0.81, -0.08)		ns	d = 0.53		?
	6 weeks	debridement vs lavage	WMD = 2.20 (-6.00, 10.40)	1 RCT // n = 112	d = -0.16 (-0.53, 0.20)		ns	d = 0.52		?
	3 months	debridement vs lavage	WMD = 0.70 (-6.48, 7.88)	1 RCT // n = 111	d = -0.02 (-0.39, 0.34)		ns	d = 0.53		?
	3 months	debridement vs lavage	MD = -0.50 (0.36)	1 RCT	n/a		ns	n/a		?
	6 months	debridement vs lavage	WMD = 0.40 (-6.83, 7.63)	1 RCT // n = 106	d = -0.12 (-0.48, 0.25)		ns	d = 0.53		?
	12 months	debridement vs lavage	WMD = 2.10 (-5.36, 9.56)	1 RCT // n = 101	d = -0.13 (-0.51, 0.26)		ns	d = 0.56		?
	12 months	debridement vs lavage	MD = -0.30 (0.41)	1 RCT	n/a		ns	n/a		?
	18 months	debridement vs lavage	WMD = 1.60 (-6.51, 9.71)	1 RCT // n = 93	d = 0.07 (-0.32, 0.46)		ns	d = 0.56		?
	24 months	debridement vs lavage	WMD = -0.60 (-8.30, 7.10)	1 RCT // n = 94	d = 0.01 (-0.37, 0.39)		ns	d = 0.54		?
	2 weeks	placebo vs debridement	WMD = 7.70 (1.09, 14.31)	1 RCT // n = 116	d = -0.43 (-0.80, -0.06)		↑	d = 0.52		?
	6 weeks	placebo vs debridement	WMD = 5.80 (-1.29, 12.89)	1 RCT // n = 114	d = -0.30 (-0.67, 0.07)		ns	d = 0.52		?
	3 months	placebo vs debridement	WMD = 2.20 (-4.04, 8.44)	1 RCT // n = 110	d = -0.13 (-0.51, 0.24)		ns	d = 0.53		?
	6 months	placebo vs debridement	WMD = 2.80 (-2.99, 8.59)	1 RCT // n = 108	d = -0.18 (-0.56, 0.20)		ns	d = 0.54		?
	12 months	placebo vs debridement	WMD = 6.90 (0.43, 13.37)	1 RCT // n = 96	d = -0.42 (-0.80, -0.03)		↑	d = 0.58		?
	18 months	placebo vs debridement	WMD = 4.30 (-2.84, 11.44)	1 RCT // n = 90	d = -0.25 (-0.67, 0.16)		ns	d = 0.60		?
	24 months	placebo vs debridement	WMD = 4.90 (-1.10, 10.90)	1 RCT // n = 88	d = -0.34 (-0.76, 0.08)		ns	d = 0.60		?
Pain free	12 months	debridment vs. washout (lavage)	RR = 5.76 (2.52, 13.18)	1 RCT // n = 76		OR = 0.04 (0.01, 0.14)	↑	d = 17.43		?
	60 months	debridment vs. washout (lavage)	RR = 5.15 (1.71, 15.49)	1 RCT // n = 58		OR = 0.09 (0.02, 0.36)	↑	d = 5.76		?

Evidence Table 27. Included Studies for Arthroscopic Lavage

<u>Author</u>	<u>Title</u>
Moseley, et al. 2002	A controlled trial of arthroscopic surgery for osteoarthritis of the knee
Kalunian, et al. 2000	Visually-guided irrigation in patients with early knee osteoarthritis: a multicenter randomized, controlled trial
Ravaud, et al. 1999	Effects of joint lavage and steroid injection in patients with osteoarthritis of the knee: results of a multicenter, randomized, controlled trial

Evidence Table 28. Excluded Studies for Arthroscopic Lavage

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
vanOosterhout, et al. 2006	Comparison of efficacy of arthroscopic lavage plus administration of corticosteroids, arthroscopic lavage plus administration of placebo, and joint aspiration plus administration of corticosteroids in arthritis of the knee: A randomized controlled trial	Excludes OA Patients
Frias, et al. 2004	Assessment of the efficacy of joint lavage versus joint lavage plus corticoids in patients with osteoarthritis of the knee	Covered by Systematic Review
Forster, et al. 2003	A prospective randomised trial comparing intra-articular Hyalgan injection and arthroscopic washout for knee osteoarthritis	Covered by Systematic Review
Smith, et al. 2003	A randomized placebo-controlled trial of arthroscopic lavage versus lavage plus intra-articular corticosteroids in the management of symptomatic osteoarthritis of the knee	Covered by Systematic Review
Hubbard, et al. 1996	Articular debridement versus washout for degeneration of the medial femoral condyle. A five-year study	Covered by Systematic Review
Moseley, et al. 1996	Arthroscopic treatment of osteoarthritis of the knee: a prospective, randomized, placebo-controlled trial. Results of a pilot study	Less than 10 patients
Edelson, et al. 1995	Short-term effects of knee washout for osteoarthritis	Case Control Study
Chang, et al. 1993	A randomized, controlled trial of arthroscopic surgery versus closed-needle joint lavage for patients with osteoarthritis of the knee	Covered by Systematic Review
Merchan, et al. 1993	Arthroscope-guided surgery versus nonoperative treatment for limited degenerative osteoarthritis of the femorotibial joint in patients over 50 years of age: a prospective comparative study	Covered by Systematic Review
Dawes, et al. 1987	Saline washout for knee osteoarthritis: results of a controlled study	Incorrect Treatment

ABBREVIATIONS USED IN ANALYSIS/RESULTS TABLES

ES(c) = Effect Size calculated (from raw data)

OR(c) = Odds Ratio calculated (from raw data)

Statistical Significance = determined by calculated Effect Size “ES(c)”

ns No statistically significant difference was detected between groups

↑ Statistically significant difference in favor of treatment of interest

↓ Statistically significant difference in favor of other treatment

ES(md) = minimum detectable effect size (two-tailed, $\alpha = 0.05$, $1-\beta = 0.80$)

MCII = Minimal Clinically Important Improvement

Power = powered to detect the MCII

- Powered to detect MCII
- Not powered to detect MCII
- ? Unable to determine if powered to detect MCII

MISCELLANEOUS ABBREVIATIONS

NR = not reported

n/a = not applicable

RCT = randomized controlled trial

ES = Effect Size

MD = Mean difference

SMD = Standardized mean difference

WMD = Weighted mean difference

RR = Relative Risk

OR = Odds Ratio

d = Cohen's *d*

0.2 = small effect

0.5 = moderate effect

0.8 = large effect

Evidence Table 29. Results from Arthroscopic Lavage Studies

Outcomes	Duration	Comparison	n	ES (c)	Statistical Significance	ES (md)	MCII	Power	Study
Pain: KSPS scale	2 weeks	lavage vs placebo	118	d = -0.18 (-0.54, 0.18)	ns	d = 0.52		?	Moseley, et al 2002
	6 weeks	lavage vs placebo	114	d = -0.07 (-0.44, 0.30)	ns	d = 0.53		?	Moseley, et al 2002
	3 months	lavage vs placebo	115	d = -0.16 (-0.53, 0.20)	ns	d = 0.53		?	Moseley, et al 2002
	6 months	lavage vs placebo	116	d = -0.23 (-0.59, 0.14)	ns	d = 0.52		?	Moseley, et al 2002
	12 months	lavage vs placebo	111	d = -0.18 (-0.56, 0.19)	ns	d = 0.54		?	Moseley, et al 2002
	18 months	lavage vs placebo	109	d = 0.08 (-0.37, 0.38)	ns	d = 0.55		?	Moseley, et al 2002
	24 months	lavage vs placebo	111	d = -0.17 (-0.54, 0.20)	ns	d = 0.54		?	Moseley, et al 2002
Pain: AIMS	2 weeks	lavage vs placebo	118	d = -0.18 (-0.54, 0.18)	ns	d = 0.52		?	Moseley, et al 2002
	6 weeks	lavage vs placebo	114	d = -0.07 (-0.44, 0.30)	ns	d = 0.53		?	Moseley, et al 2002
	3 months	lavage vs placebo	115	d = -0.16 (-0.53, 0.20)	ns	d = 0.53		?	Moseley, et al 2002
	6 months	lavage vs placebo	116	d = -0.23 (-0.59, 0.14)	ns	d = 0.52		?	Moseley, et al 2002
	12 months	lavage vs placebo	111	d = -0.18 (-0.56, 0.19)	ns	d = 0.54		?	Moseley, et al 2002
	18 months	lavage vs placebo	109	d = 0.01 (-0.37, 0.38)	ns	d = 0.55		?	Moseley, et al 2002
	24 months	lavage vs placebo	111	d = -0.17 (-0.54, 0.20)	ns	d = 0.54		?	Moseley, et al 2002
Pain: SF-36	2 weeks	lavage vs placebo	118	d = 0.40 (0.04, 0.77)	↑	d = 0.52	d = 0.47	○	Moseley, et al 2002
	6 weeks	lavage vs placebo	114	d = 0.21 (-0.16, 0.58)	ns	d = 0.53	d = 0.47	○	Moseley, et al 2002
	3 months	lavage vs placebo	115	d = -0.01 (-0.35, 0.38)	ns	d = 0.53	d = 0.47	○	Moseley, et al 2002
	6 months	lavage vs placebo	116	d = 0.01 (-0.35, 0.38)	ns	d = 0.52	d = 0.47	○	Moseley, et al 2002
	12 months	lavage vs placebo	111	d = 0.04 (-0.34, 0.41)	ns	d = 0.54	d = 0.47	○	Moseley, et al 2002
	18 months	lavage vs placebo	109	d = -0.15 (-0.52, 0.23)	ns	d = 0.55	d = 0.47	○	Moseley, et al 2002
	24 months	lavage vs placebo	112	d = -0.09 (-0.46, 0.28)	ns	d = 0.54	d = 0.47	○	Moseley, et al 2002

*Data from Kalunian et al. study is not shown as dispersion measurements were not provided.

Evidence Table 29. Results from Arthroscopic Lavage Studies

Outcomes	Duration	Comparison	n	ES (c)	Statistical Significance	ES (md)	MCII	Power	Study
Pain: VAS	1 week	lavage plus placebo injection vs. placebo injection	49	d = 0.27 (-0.30, 0.84)	ns	d = 0.83	d = 1.23	●	Ravaud, et al 1999
	4 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.19 (-0.37, 0.76)	ns	d = 0.83	d = 1.23	●	Ravaud, et al 1999
	12 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.76 (0.17, 1.35)	↑	d = 0.83	d = 1.23	●	Ravaud, et al 1999
	24 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.39 (-0.19, 0.96)	ns	d = 0.83	d = 1.23	●	Ravaud, et al 1999
Function: AIMS	2 weeks	lavage vs placebo	116	d = -0.23 (-0.60, 0.13)	ns	d = 0.52		?	Moseley, et al 2002
	6 weeks	lavage vs placebo	110	d = -0.22 (-0.60, 0.15)	ns	d = 0.54		?	Moseley, et al 2002
	3 months	lavage vs placebo	109	d = -0.08 (-0.46, 0.30)	ns	d = 0.54		?	Moseley, et al 2002
	6 months	lavage vs placebo	106	d = -0.14 (-0.52, 0.24)	ns	d = 0.55		?	Moseley, et al 2002
	12 months	lavage vs placebo	103	d = -0.33 (-0.72, 0.06)	ns	d = 0.56		?	Moseley, et al 2002
	18 months	lavage vs placebo	95	d = -0.17 (-0.57, 0.24)	ns	d = 0.58		?	Moseley, et al 2002
	24 months	lavage vs placebo	94	d = -0.31 (-0.72, 0.10)	ns	d = 0.59		?	Moseley, et al 2002
Function: SF-36	2 weeks	lavage vs placebo	117	d = -0.15 (-0.51, 0.21)	ns	d = 0.52	d = 0.17	○	Moseley, et al 2002
	6 weeks	lavage vs placebo	114	d = -0.01 (-0.36, 0.36)	ns	d = 0.53	d = 0.17	○	Moseley, et al 2002
	3 months	lavage vs placebo	115	d = -0.02 (-0.39, 0.35)	ns	d = 0.53	d = 0.17	○	Moseley, et al 2002
	6 months	lavage vs placebo	116	d = -0.15 (-0.51, 0.22)	ns	d = 0.52	d = 0.17	○	Moseley, et al 2002
	12 months	lavage vs placebo	111	d = -0.03 (-0.40, 0.35)	ns	d = 0.54	d = 0.17	○	Moseley, et al 2002
	18 months	lavage vs placebo	109	d = 0.08 (-0.30, 0.45)	ns	d = 0.55	d = 0.17	○	Moseley, et al 2002
	24 months	lavage vs placebo	111	d = -0.07 (-0.44, 0.30)	ns	d = 0.54	d = 0.17	○	Moseley, et al 2002
Global Assessment: VAS	1 week	lavage plus placebo injection vs. placebo injection	49	d = 0.18 (-0.38, 0.75)	ns	d = 0.83	d = 1.00	●	Ravaud, et al 1999
	4 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.39 (-0.18, 0.97)	ns	d = 0.83	d = 1.00	●	Ravaud, et al 1999
	12 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.58 (0.00, 1.16)	↑	d = 0.83	d = 1.00	●	Ravaud, et al 1999
	24 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.41 (-0.16, 0.98)	ns	d = 0.83	d = 1.00	●	Ravaud, et al 1999

*Data from Kalunian et al. study is not shown as dispersion measurements were not provided.

Evidence Table 29. Results from Arthroscopic Lavage Studies

Outcomes	Duration	Comparison	n	ES (c)	Statistical Significance	ES (md)	MCII	Power	Study
Lequesne Index	1 week	lavage plus placebo injection vs. placebo injection	49	d = 0.27 (-0.30, 0.84)	ns	d = 0.83		?	Ravaud, et al 1999
	4 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.44 (-0.13, 1.01)	ns	d = 0.83		?	Ravaud, et al 1999
	12 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.44 (-0.13, 1.02)	ns	d = 0.83		?	Ravaud, et al 1999
	24 weeks	lavage plus placebo injection vs. placebo injection	49	d = 0.40 (-0.17, 0.97)	ns	d = 0.83		?	Ravaud, et al 1999
Walking-Bending: AIMS	2 weeks	lavage vs placebo	118	d = -0.35 (-0.72, 0.01)	ns	d = 0.52		?	Moseley, et al 2002
	6 weeks	lavage vs placebo	114	d < 0.01 (-0.36, 0.67)	ns	d = 0.53		?	Moseley, et al 2002
	3 months	lavage vs placebo	115	d = 0.08 (-0.29, 0.44)	ns	d = 0.53		?	Moseley, et al 2002
	6 months	lavage vs placebo	116	d = 0.01 (-0.35, 0.38)	ns	d = 0.52		?	Moseley, et al 2002
	12 months	lavage vs placebo	111	d = -0.01 (-0.38, 0.37)	ns	d = 0.54		?	Moseley, et al 2002
	18 months	lavage vs placebo	109	d = 0.20 (-0.19, 0.56)	ns	d = 0.55		?	Moseley, et al 2002
	24 months	lavage vs placebo	111	d = 0.10 (-0.28, 0.50)	ns	d = 0.54		?	Moseley, et al 2002

*Data from Kalunian et al. study is not shown as dispersion measurements were not provided.

Evidence Table 30. Design and Quality for Arthroscopic Lavage Studies

† Was the funding for this study derived from a source that does not have financial interests in its results

● = Yes ○ = No
x = Not Reported * = Unclear

Author	Outcome	Duration	N	Treatment(s)	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †
Moseley, et al. 2002	AIMS - Pain	2 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Pain	6 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Pain	3 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Pain	6 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Pain	12 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Pain	18 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Pain	24 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Walking Bending	2 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Walking Bending	6 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Walking Bending	3 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Walking Bending	6 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Walking Bending	12 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Walking Bending	18 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	AIMS - Walking Bending	24 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●

Evidence Table 30. Design and Quality for Arthroscopic Lavage Studies

† Was the funding for this study derived from a source that does not have financial interests in its results

● = Yes ○ = No
x = Not Reported * = Unclear

Author	Outcome	Duration	N	Treatment(s)	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †	
Moseley, et al. 2002	Knee Specific Pain Scale	2 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●	●
Moseley, et al. 2002	Knee Specific Pain Scale	6 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●	●
Moseley, et al. 2002	Knee Specific Pain Scale	3 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●	●
Moseley, et al. 2002	Knee Specific Pain Scale	6 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●	●
Moseley, et al. 2002	Knee Specific Pain Scale	12 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●	●
Moseley, et al. 2002	Knee Specific Pain Scale	18 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●	●
Moseley, et al. 2002	Knee Specific Pain Scale	24 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●	●
Kalunian, et al. 2000	Pain (VAS)	1 Months	90	Joint Lavage vs. Joint Lavage (minimal irrigation)	×	●	×	×	●	○	●	●	●	●	●	●	●	●	●
Kalunian, et al. 2000	Pain (VAS)	3 Months	90	Joint Lavage vs. Joint Lavage (minimal irrigation)	×	●	×	×	●	○	●	●	●	●	●	●	●	●	●
Kalunian, et al. 2000	Pain (VAS)	12 Months	90	Joint Lavage vs. Joint Lavage (minimal irrigation)	×	●	×	×	●	○	●	●	●	●	●	●	●	●	●
Ravaud, et al. 1999	Pain on Walking (VAS)	1 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	●	*
Ravaud, et al. 1999	Pain on Walking (VAS)	4 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	●	*
Ravaud, et al. 1999	Pain on Walking (VAS)	12 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	●	*
Ravaud, et al. 1999	Pain on Walking (VAS)	24 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	●	*

Evidence Table 30. Design and Quality for Arthroscopic Lavage Studies

† Was the funding for this study derived from a source that does not have financial interests in its results

● = Yes ○ = No
 x = Not Reported * = Unclear

<u>Author</u>	<u>Outcome</u>	<u>Duration</u>	<u>N</u>	<u>Treatment(s)</u>	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †	
Ravaud, et al. 1999	Lequesne Functional Index Scale	1 Weeks	98	IA Corticosteroid vs. Joint Lavage	○	●	×	×	○	○	●	×	●	●	●	●	●	●	*
Ravaud, et al. 1999	Lequesne Functional Index Scale	4 Weeks	98	IA Corticosteroid vs. Joint Lavage	○	●	×	×	○	○	●	×	●	●	●	●	●	●	*
Ravaud, et al. 1999	Lequesne Functional Index Scale	12 Weeks	98	IA Corticosteroid vs. Joint Lavage	○	●	×	×	○	○	●	×	●	●	●	●	●	●	*
Ravaud, et al. 1999	Lequesne Functional Index Scale	24 Weeks	98	IA Corticosteroid vs. Joint Lavage	○	●	×	×	○	○	●	×	●	●	●	●	●	●	*

Evidence Table 30. Design and Quality for Arthroscopic Lavage Studies

† Was the funding for this study derived from a source that does not have financial interests in its results

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<u>Author</u>	<u>Outcome</u>	<u>Duration</u>	<u>N</u>	<u>Treatment(s)</u>	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †
Ravaud, et al. 1999	Patient Global VAS	1 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	*
Ravaud, et al. 1999	Patient Global VAS	4 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	*
Ravaud, et al. 1999	Patient Global VAS	12 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	*
Ravaud, et al. 1999	Patient Global VAS	24 Weeks	98	IA Corticosteroid vs. Joint Lavage	●	●	×	×	○	○	●	×	●	●	●	●	●	*

Evidence Table 30. Design and Quality for Arthroscopic Lavage Studies

† Was the funding for this study derived from a source that does not have financial interests in its results

● = Yes ○ = No
x = Not Reported * = Unclear

Author	Outcome	Duration	N	Treatment(s)	Follow Up - 80% or more	Prospective	Allocation Concealment	Stochastic Randomization	Patients Blinded	Caregiver Blinded	Those rating outcome Blinded	a priori Power Analysis	All Groups have similar characteristics at entry	All Groups have similar outcome performance at entry	All groups have similar timing for outcome measurement	Concurrent Control Group	Matched Control Group	Funding †
Moseley, et al. 2002	SF-36 - Bodily Pain	2 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	●	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Bodily Pain	6 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	●	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Bodily Pain	3 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	●	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Bodily Pain	6 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	●	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Bodily Pain	12 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	●	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Bodily Pain	18 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	●	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Bodily Pain	24 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	●	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Physical Function	2 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Physical Function	6 Weeks	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Physical Function	3 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Physical Function	6 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Physical Function	12 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Physical Function	18 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●
Moseley, et al. 2002	SF-36 - Physical Function	24 Months	180	Arthroscopic Debridement vs. Arthroscopic Washout or Placebo	●	●	●	×	●	○	●	○	●	●	●	●	●	●

Evidence Table 31. Patient Characteristics from Arthroscopic Lavage Studies

<u>Author</u>	<u>Group/Treatment</u>	<u>Co-Interventions</u>	<u>Co-Morbidities</u>	<u>Adverse Events</u>	<u>Study Enrollement / Eligibility Criteria</u>	<u>Study Exclusion Criteria</u>
Moseley, et al. 2002	Debridement	Postoperative care was delivered according to a protocol specifying that all patients should receive the same walking aids, graduated exercise program, and analgesics	NR	there were 2 minor complications (treatment group not specified): incisional erythema developed in one patient, who was given antibiotics; calf swelling developed in a second patient's leg that had undergone surgery	75 years old or younger, OA knee as defined by ACR, at least moderate knee pain on average (4+ on 10cm VAS) despite medical treatment for at least 6 months	arthroscopy of knee during previous 2 years; OA radiographic severity of 9+ (scale 0-12); severe deformity; serious medical problems
	Lavage					
	Placebo					
Kalunian, et al. 2000	Full Irrigation	NR	NR	NR	greater than 40 years of age; knee pain for 10 years or less; unsatisfactory pain relief as assessed by both patient and primary physician despite at least 6 weeks of supervised physical therapy and two or more different non-steroidal anti-inflammatory drugs and/or analgesics given for 3 or more weeks each	back/hip or ankle/foot disease of significant severity to confuse knee pain assessment; intraarticular corticosteroid injection in affected knee within one month prior; significantly abnormal radiographs; BMI greater than 35; sensitivity to amide anesthetic agents; recent history of substance abuse; serious medical illness that would place patient at increased risk if included in study
	Minimal Irrigation					
Ravaud, et al. 1999	Cortivazol	acetaminophen and NSAIDs allowed during trial; 3 day NSAID and 8 hr analgesics washout period before trial	NR	8% of cortivazol group described procedure as painful or very painful	ACR criteria for knee OA; presence of pain of 40+ on VAS scale; and radiographic evidence of tibiofemoral OA (within the last 6 months) consisting of at least grade II changes according to the Kellgren/Lawrence (interpreted as definite osteophytes and minimal joint space narrowing)	serious concomitant medical illness; secondary arthritis as defined by Osteoarthritis Research Society; knee surgery scheduled within the following 12 months; local or systemic contraindication to the use of IA corticosteroids or joint lavage (infection, anticoagulant therapy, hypersensitivity to lidocaine); any IA injection during the 3 months prior to the study; current treatment with systemic corticosteroids or any slow-acting anti-osteoarthritic drugs (such as diacerhein or chondroitin sulfate)
	Joint Lavage			19% of lavage group described the procedure as painful or very painful		
	Joint Lavage + Cortivazol			29% of joint lavage + cortivazol group described procedure as painful or very painful		
	Placebo			18% of placebo group described procedure as painful or very painful		

Evidence Table 32. Included Studies for Realignment Osteotomy

<u>Author</u>	<u>Title</u>
Brouwer, et al. 2006	Osteotomy for medial compartment arthritis of the knee using a closing wedge or an opening wedge controlled by a Puddu plate. A one-year randomised, controlled study
Dahl, et al. 2005	A 2-year prospective study of patient-relevant outcomes in patients operated on for knee osteoarthritis with tibial osteotomy
Hoell, et al. 2005	The high tibial osteotomy, open versus closed wedge, a comparison of methods in 108 patients
Devgan, et al. 2003	Medial opening wedge high tibial osteotomy for osteoarthritis of knee: long-term results in 50 knees
Adili, et al. 2002	Valgus high tibial osteotomy. Comparison between an Ilizarov and a Coventry wedge technique for the treatment of medial compartment osteoarthritis of the knee
Klinger, et al. 2001	Open wedge tibial osteotomy by hemicallotasis for medial compartment osteoarthritis
Stukenborg-Colsman, et al. 2001	High tibial osteotomy versus unicompartmental joint replacement in unicompartmental knee joint osteoarthritis: 7-10-year follow-up prospective randomised study
Magyar, et al. 1999	Open-wedge osteotomy by hemicallotasis or the closed-wedge technique for osteoarthritis of the knee. A randomised study of 50 operations
Naudie, et al. 1999	The Install Award. Survivorship of the high tibial valgus osteotomy. A 10- to -22-year followup study
Yasuda, et al. 1991	Long-term evaluation of high tibial osteotomy for medial osteoarthritis of the knee
Myrnerets, et al. 1980	High tibial osteotomy with overcorrection of varus malalignment in medial gonarthrosis

Evidence Table 33. Excluded Studies for Realignment Osteotomy

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Michaela, et al. 2008	Long-term outcome after high tibial osteotomy	Cannot separate OAK from malalignment
Omori, et al. 2008	High tibial osteotomy using two threaded pins and figure-of-eight wiring fixation for medial knee osteoarthritis: 14 to 24 years follow-up results	Greater than 20% dropout rate
van, et al. 2008	Early complications after high tibial osteotomy: a comparison of two techniques	Insufficient Data
Backstein, et al. 2007	Long-term follow-up of distal femoral varus osteotomy of the knee	Does not follow recommendation inclusion criteria
Bilgen, et al. 2007	High tibial osteotomy for medial compartment osteoarthritis: a comparison of clinical and radiological results from closed wedge and focal dome osteotomies	Does not follow recommendation inclusion criteria
Hennig, et al. 2007	The safety and efficacy of a new adjustable plate used for proximal tibial opening wedge osteotomy in the treatment of unicompartmental knee osteoarthritis	Does not follow recommendation inclusion criteria
Aoki, et al. 2006	Inverted V-shaped high tibial osteotomy compared with closing-wedge high tibial osteotomy for osteoarthritis of the knee. Ten-year follow-up result	Greater than 20% dropout rate
Asik, et al. 2006	High tibial osteotomy with Puddu plate for the treatment of varus gonarthrosis	Not Relevant
Esenkaya, et al. 2006	Proximal tibia medial open-wedge osteotomy using plates with wedges: early results in 58 cases	Insufficient Data
Flecher, et al. 2006	A 12-28-year followup study of closing wedge high tibial osteotomy	Insufficient Data
Ohsawa, et al. 2006	High tibial osteotomy for osteoarthritis of the knee with varus deformity utilizing the hemicallotasis method	Insufficient Data
Papachristou, et al. 2006	Deterioration of long-term results following high tibial osteotomy in patients under 60 years of age	Insufficient Data
Polyzois, et al. 2006	The oblique high tibial osteotomy technique without bone removal and with rigid blade plate fixation for the treatment of medial osteoarthritis of the varus knee: medium and long-term results	Insufficient Data
Takemae, et al. 2006	Three-dimensional knee motion before and after high tibial osteotomy for medial knee osteoarthritis	Insufficient Data

Evidence Table 33. Excluded Studies for Realignment Osteotomy

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Viskontas, et al. 2006	High tibial osteotomy with use of the Taylor Spatial Frame external fixator for osteoarthritis of the knee	Fewer than 10 patients per arm
Yagi, et al. 2006	Treatment of knee osteoarthritis associated with extraarticular varus deformity of the femur: staged total knee arthroplasty following corrective osteotomy	Does not follow recommendation inclusion criteria
Bauer, et al. 2005	Drop foot after high tibial osteotomy: a prospective study of aetiological factors	Does not follow recommendation inclusion criteria
Harrison, et al. 2005	A comparison of plate versus staple-and-cast fixation in maintaining femoral tibial alignment after valgus tibial osteotomy	Does not follow recommendation inclusion criteria
Mont, et al. 2004	Different surgical options for monocompartmental osteoarthritis of the knee: high tibial osteotomy versus unicompartamental knee arthroplasty versus total knee arthroplasty: indications, techniques, results, and controversies	Not Relevant
Wu, et al. 2004	A long-term follow-up study of high tibial osteotomy for medial compartment osteoarthrosis	Greater than 20% dropout rate
Aglietti, et al. 2003	High tibial valgus osteotomy for medial gonarthrosis: a 10- to 21-year study	Greater than 20% dropout rate
Pfahler, et al. 2003	Long-term results of high tibial osteotomy for medial osteoarthritis of the knee	Greater than 20% dropout rate
Madan, et al. 2002	Intermediate follow-up of high tibial osteotomy: a comparison of two techniques	Does not follow recommendation inclusion criteria
Madan, et al. 2002	Clinical effectiveness of high tibial osteotomy for osteoarthritis of the knee	Insufficient Data
Saito, et al. 2002	High tibial osteotomy with anterior advancement of distal fragment for medial and patellofemoral compartmental osteoarthritis of the knee	Not Relevant
Choi, et al. 2001	High tibial osteotomy for varus gonarthrosis: A 10- to 24-year follow-up study	Greater than 20% dropout rate
Leutloff, et al. 2001	High tibial osteotomy for valgus and varus deformities of the knee	Insufficient Data
Nakamura, et al. 2001	Open-wedge osteotomy of the proximal tibia hemicallotasis	Only measuring Surrogate Outcome

Evidence Table 33. Excluded Studies for Realignment Osteotomy

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Weale, et al. 2001	High tibial osteotomy using a dynamic axial external fixator	Not Relevant
Majima, et al. 2000	Progression of joint arthrosis 10 to 15 years after high tibial osteotomy	Greater than 20% dropout rate
Motycka, et al. 2000	The incidence of thrombosis in high tibial osteotomies with and without the use of a tourniquet	Not Relevant
Oberg, et al. 2000	Functional outcome after high tibial osteotomy: a study using individual goal achievement as the primary outcome variable	Greater than 20% dropout rate
Sangwan, et al. 2000	Unicompartmental osteoarthritis of the knee: an innovative osteotomy	Insufficient Data
Geiger, et al. 1999	External fixation in proximal tibial osteotomy: a comparison of three methods	Insufficient Data
Schultz, et al. 1998	The influence of high tibial osteotomy on the patello-femoral joint: An arthroscopic study	Insufficient Data
Cameron, et al. 1997	Prognostic factors in the outcome of supracondylar femoral osteotomy for lateral compartment osteoarthritis of the knee	Not Relevant
Catagni, et al. 1994	Treatment of genu varum in medial compartment osteoarthritis of the knee using the Ilizarov method	Insufficient Data
Weale, et al. 1994	Unicompartmental arthroplasty and high tibial osteotomy for osteoarthritis of the knee. A comparative study with a 12 to 17-year follow-up period	Greater than 20% dropout rate
BSR 1993	Guidelines for the diagnosis, investigation and management of osteoarthritis of the hip and knee. Report of a Joint Working Group of the British Society for Rheumatology and the Research Unit of the Royal College of Physicians	Not Relevant
Coventry, et al. 1993	Proximal tibial osteotomy. A critical long-term study of eighty-seven cases	Insufficient Data
Patond, et al. 1993	Medial open wedge high tibial osteotomy in medial compartment osteoarthritis of the knee	Insufficient Data
Bhan, et al. 1992	High valgus tibial osteotomy for osteoarthritis of the knee	Insufficient Data

Evidence Table 33. Excluded Studies for Realignment Osteotomy

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Yasuda, et al. 1992	A ten- to 15-year follow-up observation of high tibial osteotomy in medial compartment osteoarthritis	Greater than 20% dropout rate
Rudan, et al. 1991	Valgus high tibial osteotomy. A long-term follow-up study	Insufficient Data
Rudan, et al. 1990	High tibial osteotomy. A prospective clinical and roentgenographic review	Insufficient Data
Specchiulli, et al. 1990	Tibial osteotomy in the treatment of varus osteoarthritic knee	Insufficient Data
Valenti, et al. 1990	Long term evaluation of high tibial valgus osteotomy	Greater than 20% dropout rate
Koshino, et al. 1989	High tibial osteotomy with blade plate fixation for osteoarthritis of Japanese knee	Greater than 20% dropout rate
Morrey, et al. 1989	Upper tibial osteotomy for secondary osteoarthritis of the knee	Does not follow recommendation inclusion criteria
Nguyen, et al. 1989	High tibial osteotomy compared with high tibial and Maquet procedures in medial and patellofemoral compartment osteoarthritis	Insufficient Data
Healy, et al. 1988	Distal femoral varus osteotomy	Does not follow recommendation inclusion criteria
McDermott, et al. 1988	Distal femoral varus osteotomy for valgus deformity of the knee	Greater than 20% dropout rate
Rinonapoli, et al. 1988	High tibial osteotomy in the treatment of arthritic varus knee. A medium term (small) review of 61 cases	Insufficient Data
Bernhardt, et al. 1987	Proximal tibial valgus osteotomy. The Veterans Administration Hospital experience, Wichita, Kansas, 1977-82	Insufficient Data
Coventry, et al. 1987	Proximal tibial varus osteotomy for osteoarthritis of the lateral compartment of the knee	Insufficient Data
Hernigou, et al. 1987	Proximal tibial osteotomy for osteoarthritis with varus deformity. A ten to thirteen-year follow-up study	Greater than 20% dropout rate

Evidence Table 33. Excluded Studies for Realignment Osteotomy

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Mabrey, et al. 1987	High tibial osteotomy: a retrospective review of 72 cases	Greater than 20% dropout rate
Pachelli, et al. 1987	Long-term results of valgus tibial osteotomy	Insufficient Data
Broughton, et al. 1986	Unicompartmental replacement and high tibial osteotomy for osteoarthritis of the knee. A comparative study after 5-10 years' follow-up	Greater than 20% dropout rate
Healy, et al. 1986	High tibial valgus osteotomy: A clinical review	Insufficient Data
Sasaki, et al. 1986	High tibial osteotomy combined with anterior displacement of the tibial tubercle for osteoarthritis of the knee	Not Relevant
Vainionpaa, et al. 1981	Tibial osteotomy for osteoarthritis of the knee. A five to ten-year follow-up study	Greater than 20% dropout rate

Evidence Table 34. Results from Realignment Osteotomy Case Series Studies

Outcome	Duration	Treatment	n	Mean Score (95% CI)	Percent	Study
Pain (VAS)	Preoperative	CWO	47	5.9 (5.33, 6.47)		Brouwer, et al.
	1 year	CWO	47	3.6 (2.97, 4.23)		Brouwer, et al.
	Preoperative	OWO	45	6.3 (5.94, 6.66)		Brouwer, et al.
	1 year	OWO	45	3.6 (2.75, 4.45)		Brouwer, et al.
WOMAC Pain	Baseline	OWO	15	12.3 (10.98, 13.02)		Adili, et al.
	Baseline	CWO	15	12.8 (10.76, 14.84)		Adili, et al.
	12 Weeks Post Operatively	OWO	15	5.5 (3.55, 7.45)		Adili, et al.
	12 Weeks Post Operatively	CWO	15	9.1 (7.32, 10.88)		Adili, et al.
Pain (KOOS)	Preoperative	HCO	58	41 (36.62, 45.38)		Dahl, et al.
	4 weeks	HCO	49	51 (44.84, 57.16)		Dahl, et al.
	7 weeks	HCO	47	59 (52.71, 65.29)		Dahl, et al.
	10 weeks	HCO	47	62 (56.28, 67.72)		Dahl, et al.
	one week after extraction	HCO	56	71 (65.5, 76.5)		Dahl, et al.
	6 month	HCO	51	74 (68.51, 79.49)		Dahl, et al.
	1 year	HCO	51	75 (69.51, 80.49)		Dahl, et al.
	2 Year	HCO	52	80 (74.56, 85.44)		Dahl, et al.
Pain at rest (% Patients)	Preoperative	OWT	51		32%	Hoell, et al.
	Preoperative	CWT	57		40%	Hoell, et al.
	22.5 Months Post Operative	OWT	51		16%	Hoell, et al.
	22.5 Months Post Operative	CWT	57		25%	Hoell, et al.
Pain walking (% Patients)	Preoperative	OWT	51		100%	Hoell, et al.
	Preoperative	CWT	57		100%	Hoell, et al.
	22.5 Months Post Operative	OWT	51		63%	Hoell, et al.
	22.5 Months Post Operative	CWT	57		62%	Hoell, et al.
Pain on weight-bearing	Preoperative	Normal Correction	40		100%	Myrnerts et al.,
	1 Year Post Surgery	Normal Correction	40		45%	Myrnerts et al.,
	2 Years Post Surgery	Normal Correction	40		49%	Myrnerts et al.,

Evidence Table 34. Results from Realignment Osteotomy Case Series Studies

Outcome	Duration	Treatment	n	Mean Score (95% CI)	Percent	Study
Pain on weight-bearing	Preoperative	Over Correction	37		100%	Myrnerts et al.,
	1 Year Post Surgery	Over Correction	37		31%	Myrnerts et al.,
	2 Years Post Surgery	Over Correction	37		30%	Myrnerts et al.,
Range of Motion	Preoperative	OWT	51	127 (118.9, 135.1)		Hoell, et al.
	22.5 Months Post Operative	OWT	51	129 (119.7, 138.3)		Hoell, et al.
	Preoperative	CWT	57	124 (111.2, 136.8)		Hoell, et al.
	22.5 Months Post Operative	CWT	57	127 (118.6, 135.4)		Hoell, et al.
Range of Motion (% Patients with Full ROM)	2 years	OWO	50		86%	Devgan, et al.
Range of Motion	PostOperative		32	117 (115.79, 118.21)		Stukenborg, et al.
WOMAC Function	Baseline	OWO	15	39 (34.54, 43.46)		Adili, et al.
	Baseline	CWO	15	36.3 (31.93, 40.67)		Adili, et al.
	12 Weeks Post Operatively	OWO	15	19 (14.07, 23.93)		Adili, et al.
	12 Weeks Post Operatively	CWO	15	28.4 (25.3, 31.5)		Adili, et al.
WOMAC Stiffness	Baseline	OWO	15	4.5 (3.95, 5.05)		Adili, et al.
	Baseline	CWO	15	4.3 (3.62, 4.98)		Adili, et al.
	12 Weeks Post Operatively	OWO	15	2.6 (1.79, 3.41)		Adili, et al.
	12 Weeks Post Operatively	CWO	15	3.8 (2.87, 4.73)		Adili, et al.
Symptom (KOOS)	Preoperative	HCO	58	50 (45.37, 54.63)		Dahl, et al.
	4 weeks	HCO	49	55 (49.77, 60.23)		Dahl, et al.
	7 weeks	HCO	47	61 (55.57, 66.43)		Dahl, et al.
	10 weeks	HCO	47	63 (58.02, 67.98)		Dahl, et al.
	one week after extraction	HCO	56	68 (62.51, 73.49)		Dahl, et al.
	6 month	HCO	51	74 (68.51, 79.49)		Dahl, et al.
	1 year	HCO	51	75 (69.51, 80.49)		Dahl, et al.
	2 Year	HCO	52	80 (74.56, 85.44)		Dahl, et al.

Evidence Table 34. Results from Realignment Osteotomy Case Series Studies

Outcome	Duration	Treatment	n	Mean Score (95% CI)	Percent	Study
Activities of daily life (KOOS)	Preoperative	HCO	58	48 (43.11, 52.89)		Dahl, et al.
	4 weeks	HCO	49	49 (43.4, 54.6)		Dahl, et al.
	7 weeks	HCO	47	57 (51.7, 62.3)		Dahl, et al.
	10 weeks	HCO	47	62 (57.43, 66.57)		Dahl, et al.
	one week after extraction	HCO	56	71 (65.76, 76.24)		Dahl, et al.
	6 month	HCO	51	75 (69.24, 80.76)		Dahl, et al.
	1 year	HCO	51	79 (73.51, 84.49)		Dahl, et al.
	2 Year	HCO	52	80 (74.84, 85.16)		Dahl, et al.
Sport and recreation function (KOOS)	Preoperative	HCO	58	9 (5.91, 12.09)		Dahl, et al.
	4 weeks	HCO	49	2 (0.6, 3.4)		Dahl, et al.
	7 weeks	HCO	47	6 (3.14, 8.86)		Dahl, et al.
	10 weeks	HCO	47	5 (0, 10.58)		Dahl, et al.
	one week after extraction	HCO	56	11 (7.07, 14.93)		Dahl, et al.
	6 month	HCO	51	20 (13.41, 26.59)		Dahl, et al.
	1 year	HCO	51	30 (22.04, 37.96)		Dahl, et al.
	2 Year	HCO	52	29 (21.39, 36.61)		Dahl, et al.
Knee related quality of life KOOS	Preoperative	HCO	58	21 (17.4, 24.6)		Dahl, et al.
	4 weeks	HCO	49	24 (18.68, 29.32)		Dahl, et al.
	7 weeks	HCO	47	33 (27, 39)		Dahl, et al.
	10 weeks	HCO	47	32 (26.85, 37.15)		Dahl, et al.
	one week after extraction	HCO	56	43 (37.24, 48.76)		Dahl, et al.
	6 month	HCO	51	52 (45.32, 58.68)		Dahl, et al.
	1 year	HCO	51	56 (48.59, 63.41)		Dahl, et al.
	2 Year	HCO	52	61 (54.2, 67.8)		Dahl, et al.

Evidence Table 34. Results from Realignment Osteotomy Case Series Studies

Outcome	Duration	Treatment	n	Mean Score (95% CI)	Percent	Study
Lysholm Score	PreOperation	HTO	25	56 (51.69, 60.31)		Magyar, et al.
	2 Years Follow Up	HTO	25	86 (80.14, 91.86)		Magyar, et al.
	PreOperation	HCO	25	73 (69.27, 76.73)		Magyar, et al.
	2 Years Follow Up	HCO	25	83.98 (79.57, 88.39)		Magyar, et al.
	PreOperation	OWO	22	57.35 (53.92, 60.78)		Klinger, et al.
	16 Months Follow Up	OWO	22	89 (85.1, 92.9)		Klinger, et al.
Knee Society Function	Hospital Discharge		32	71 (69.27, 72.73)		Stukenborg, et al.
Survival	5 years		85		73%	Naudie, et al.
	10 years		85		51%	Naudie, et al.
75%-100% Pain Relief	2 Years	OWO	50		72%	Devgan, et al.
	6Years	OWO	50		48%	Devgan, et al.
50-75% Pain Relief	2 Years	OWO	50		8%	Devgan, et al.
	6Years	OWO	50		28%	Devgan, et al.
Less than 50% Pain Relief	2 Years	OWO	50		20%	Devgan, et al.
	6Years	OWO	50		24%	Devgan, et al.
Improvement of Pain	22.5 Months Post Operative	OWT	51		82%	Hoell, et al.
	22.5 Months Post Operative	CWT	57		82%	Hoell, et al.
% Good JOA Score	Preoperative	HTO	78		0%	Yasuda, et al.
	6 Years	HTO	53		62%	Yasuda, et al.
% Fair JOA Score	Preoperative	HTO	78		11%	Yasuda, et al.
	6 Years	HTO	53		24%	Yasuda, et al.
% Poor JOA Score	Preoperative	HTO	78		89%	Yasuda, et al.
	6 Years	HTO	53		15%	Yasuda, et al.
Walking Distance	Preoperative	CWO	47	2.9 (2.45, 3.35)		Brouwer, et al.
	One Year after surgery	CWO	47	4.6 (3.57, 5.63)		Brouwer, et al.
	Preoperative	OWO	45	3.1 (2.64, 3.56)		Brouwer, et al.
	One Year after surgery	OWO	45	5.3 (4.01, 6.59)		Brouwer, et al.

Evidence Table 34. Results from Realignment Osteotomy Case Series Studies

Outcome	Duration	Treatment	n	Mean Score (95% CI)	Percent	Study
Patient Opinion of Results: Worse than Before Surgery	1 or 2 years post surgery	Normal Correction	40		12%	Myrtnets, et al.,
	1 or 2 years post surgery	Over Correction	37		5%	Myrtnets, et al.,
Patient Opinion of Results: Same as Before Surgery	1 or 2 years post surgery	Normal Correction	40		12%	Myrtnets, et al.,
	1 or 2 years post surgery	Over Correction	37		8%	Myrtnets, et al.,
Patient Opinion of Results: A Little Better than Before Surgery	1 or 2 years post surgery	Normal Correction	40		29%	Myrtnets, et al.,
	1 or 2 years post surgery	Over Correction	37		16%	Myrtnets, et al.,
Patients Opinion of Results: Much Better than Before Surgery	1 or 2 years post surgery	Normal Correction	40		32%	Myrtnets, et al.,
	1 or 2 years post surgery	Over Correction	37		43%	Myrtnets, et al.,
Patient Opinion of Results: No Pain at All	1 or 2 years post surgery	Normal Correction	40		15%	Myrtnets, et al.,
	1 or 2 years post surgery	Over Correction	37		27%	Myrtnets, et al.,

Evidence Table 35. Complications Reported by Realignment Osteotomy Case Series Studies

	Naudie, et al.	Devgan, et al.	Magyar, et al.	Stukenberg, et al.	Yasuda, et al.	Dahl, et al.	Myrnets, et al.	Brouwer, et al.	Klinger, et al.	Hoell, et al.	Adili, et al.
Complication	1%	4%	4%								
Ankle Stiffness											17%
Deep Infection	9%										
Delayed Union of Osteotomy	5%			3%	1%						
Deep Vein Thrombosis				9%		4%	3%				17%
Fracture of the Tibial Plateau								3%			
Hematoma									9%		
Iliaca-Crest Morbidity								10%			
Instability	1%										
Intraarticular Fracture	2%										
Lateral Articular Fracture									1%		
Loose Pin at Removal of Fixator/Pins						12%					
Loss of Correction						2%					
Medial Joint Pain											43%
Minor Infections											40%
Nonunion	6%							2%			
Pain- Osteotomy											7%
Pain in the Iliac Crest								2%			
Pain in Proximal Tibiofibular Joint								1%			
Palsy of the Common Peroneal Nerve								1%			
Peroneal Nerve Palsy	2%				3%						
Pin Site Infection Grade 2			33%			10%			9%		
Pin/Wire Removal for infection											23%
Post Operative Dorsal Shift of the Tibial Plateau										2%	
Pseudoarthrosis						2%	1%			4%	
Removal of the Osteosynthesis Materials								41%			
Reoperation							18%	3%			
Revised to TKA							3%	1%		6%	
Revised w/ Arthroplasty	20%			3%							
Septic Arthritis						2%					
Superficial Wound Infection	9%	2%		6%	1%			1%			
Wound Infection							6%				

Evidence Table 36. Included Studies for Free-Floating Interpositional Device

<u>Author</u>	<u>Title</u>
AOA, et al. 2007	Australian Orthopaedic Association National Joint Replacement Registry Annual Report 2007
AOA, et al. 2006	Australian Orthopaedic Association National Joint Replacement Registry Annual Report 2006
AOA, et al. 2005	Australian Orthopaedic Association National Joint Replacement Registry Annual Report 2005
Sisto, et al. 2005	UniSpacer arthroplasty of the knee
AOA, et al. 2004	Australian Orthopaedic Association National Joint Replacement Registry Annual Report 2004

Evidence Table 37. Excluded Studies for Free-Floating Interpositional Device

<u>Author</u>	<u>Title</u>	<u>Reason for Exclusion</u>
Hallock, et al. 2005	The UniSpacer: a treatment alternative for the middle-aged patient	Insufficient Data
Geier, et al. 2003	The UniSpacer for knee osteoarthritis	Insufficient Data
Hallock, et al. 2003	Unicompartmental tibial hemiarthroplasty: early results of the UniSpacer knee	Not Relevant

Evidence Table 38. Results from Free-Floating Interpositional Device Case Series Studies

Outcome	Duration	n (patients)	n (knees)	Preoperative Measure (95% CI)	Postoperative Measure (95 % CI)	p value*	Study
Knee Society Function Score	26 months	34	37	60 (56.78, 63.22) **	69 (67.96, 70.04)**	0.0001	Sisto et al
Knee Society Objective Score	26 months	34	37	62 (61.03, 62.97) **	72 (70.95, 73.05)**	0.00	Sisto et al
Pain	26 months	34	37	22 (21.28, 22.72) **	26 (24.98, 27.02)**	0.001	Sisto et al
Percent Increased Activity Level	26 months	34	37		27%		Sisto et al
Percent Able to Participate in High-Impact Sports	26 months	34	37		14%		Sisto et al
Presence of Swelling	26 months	34	37		27%		Sisto et al
Revision Rate	26 months	34	37		32%		Sisto et al
	3 years	39	NR		62.4% (47.3, 77.5)		AOA Joint Registry

* Computed using unpaired t test

** 95% Confidence Interval Estimated from ranges