List of supplementary materials

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Supplemental Appendix A: Search strategies

Central search

Steps	Search details
#1:	MeSH descriptor: [Knee Joint] explode all trees OR (knee):ti,ab,kw OR (knee*):ti,ab,kw
#2:	MeSH descriptor: [Osteoarthritis, Knee] explode all trees OR (arthr*):ti,ab,kw OR (osteoarthr*):ti,ab,kw OR (degenerative joint disease):ti,ab,kw
#3:	("musculoskeletal manipulation") OR (MH "Manipulation, Orthopedic") OR (TI manual therapy OR AB Manual therapy) OR (TI manipulat* OR AB manipulat*) OR (TI mobili* OR AB mobili*)
#4:	(MeSH descriptor: [Randomized Controlled Trial] explode all trees) OR ((randomized control* trial*):ti,ab,kw) OR ((randomized trial*):ti,ab,kw) OR (clinical):ti,ab,kw) OR ((random*):ti,ab,kw) OR ((random* control*):ti,ab,kw)) AND ((trial):ti,ab,kw)
#5:	(MH "Adult+") OR (MH "Young Adult")
#6: #1 AND #2 AND #3 AND #4 AND #5	
#7: #6 with the following filters (English and publication date up to April 2023)	

CINAHL search

Steps	Search details
#1:	(MH "Knee Joint+") OR (TI knee OR AB knee) OR (TI knee* OR AB knee*)
#2:	(MH "Osteoarthritis, Knee") OR (TI arthr* OR AB arthr*) OR (TI osteoarthr* OR AB osteoarthr*) OR (TI degenerative joint disease OR AB degenerative joint disease)
#3:	("musculoskeletal manipulation") OR (MH "Manipulation, Orthopedic") OR (TI manual therapy OR AB Manual therapy) OR (TI manipulat* OR AB manipulat*) OR (TI mobili* OR AB mobili*)

#4:	(MH "Randomized Controlled Trials+") OR (TI randomized control* trial* OR AB randomized control* trial*) OR (TI randomized trial* OR AB randomized trial*) OR (((TI clinical OR AB clinical) OR (TI random* OR AB random*) OR (TI random* control* OR AB random* control*)) AND (TI trial OR AB trial))
#5:	(MH "Adult+") OR (MH "Young Adult")
#6: #1 AND #2 AND #3 AND #4 AND #5	
#7: #6 with the following filters (English and publication date up to April 2023)	

Embase search

Steps	Search details
#1:	‘knee’/exp OR knee:ab,ti OR knee*:ab,ti
#2:	'knee osteoarthritis'/exp OR arthr*:ab,ti OR osteoarthr*:ab,ti OR 'osteoarthritis'/exp OR “degenerative AND joint AND disease”:ab,ti
#3:	'musculoskeletal manipulation'/exp OR 'orthopedic manipulation'/exp OR ‘manual AND therapy’:ab,ti OR manipulat*:ab/ti OR mobili*:ab,ti
#4:	('randomized AND control* AND trial*':ab,ti OR 'randomized AND trial*':ab,ti OR 'randomized controlled trial'/exp OR ((‘clinical”ab,ti OR ‘random*’:ab,ti OR (‘random* AND ‘control*’:ab,ti)) AND ‘trial*’:ab,ti)
#5:	‘'adult'/exp OR 'young adult'/exp
#6: #1 AND #2 AND #3 AND #4 AND #5	
#7: #6 with the following filters (English and publication years <1966-2023)	

PubMed search

Steps	Search details
#1:	((knee*[Title/Abstract]) OR (knee[Title/Abstract])) OR ("Knee Joint"[Mesh])
#2:	((((degenerative joint disease[Title/Abstract]) OR ("Osteoarthritis"[Mesh])) OR (osteoarthr*[Title/Abstract])) OR (arthr*[Title/Abstract])) OR ("Osteoarthritis, Knee"[Mesh])
#3:	((((mobili*[Title/Abstract]) OR (manipulat*[Title/Abstract])) OR (manual therapy[Title/Abstract])) OR ("Manipulation, Orthopedic"[Mesh])) OR ("Musculoskeletal Manipulations"[Mesh])
#4:	(((((((clinical[Title/Abstract]) OR (random*[Title/Abstract])) OR (random* control[Title/Abstract])) OR (random* control*[Title/Abstract])) AND (trial*[Title/Abstract])) OR ((randomized controlled trial*) AND (randomized controlled trial*[Title/Abstract]))) OR (randomized trial*[Title/Abstract])) OR ("Randomized Controlled Trial"[Publication Type])
#5:	("Young Adult"[Mesh]) OR ("Adult"[Mesh])
#6: #1 AND #2 AND #3 AND #4 AND #5	
#7: #6 with the following filters (English and publication date up to 3/31/2023)	

Supplemental appendix B: Inclusion and exclusion criteria

	Inclusion Criteria	Exclusion Criteria
Participants / Population	• Adults aged 18+ receiving treatments for knee OA	• Studies that include conditions other than knee joint complex osteoarthritis, unless those individuals also have knee joint complex osteoarthritis • Animal studies • Studies that include subjects that have had any knee surgery in the past 6 months, or have undergone a total or partial knee arthroplasty in the involved knee at any time
Interventions	• Includes knee joint mobilization or manipulation performed by a clinician, potentially alongside other interventions as long as the effect of the manual therapy intervention was being assessed	• Other forms of manual therapy treatment (e.g., massage, soft tissue mobilization, lymphatic massage/drainage, cupping, dry needling, acupuncture, acupressure) in the absence of joint mobilization or manipulation • Manual therapy as part of a group of interventions where the effect of manual therapy was not assessed (e.g., a trial where everyone received manual therapy as part of standard care, and the purpose of the trial was to assess the effect of other interventions, such as exercise, education, medications, etc.) • Stretching
Study Design	• Randomized clinical trials	• All non-primary literature, including reviews, dissertations, theses, editorials, study protocols, abstracts, and clinical practice guidelines
Language	• English	

Abbreviations: OA, osteoarthritis.

Supplemental appendix C: Information about excluded trials

Primary author and year of publication	Study title	Exclusion reason
Horng (2013)	The effects of collateral meridian therapy for knee osteoarthritis pain management: a pilot study	Wrong intervention
Iversen (2012)	Rehabilitation interventions for pain and disability in osteoarthritis: a review of interventions including exercise, manual techniques, and assistive devices	Wrong study design
Kitay (2009)	Efficacy of combined local mechanical vibrations, continuous passive motion and thermotherapy in the management of osteoarthritis of the knee	Wrong intervention
Gurudut (2020)	Comparative effect of graded motor imagery and progressive muscle relaxation on mobility and function in patients with knee osteoarthritis: a pilot study	Wrong intervention
Dunning (2018)	Periosteal electrical dry needling as an adjunct to exercise and manual therapy for knee osteoarthritis	Wrong intervention
Cuesta-Barriuso (2021)	The effectiveness of manual therapy in addition to passive stretching exercises in the treatment of patients with haemophilic knee arthropathy: A randomized, single-blind clinical trial	Wrong patient population
Abou-Raya (2013)	Effect of low dose oral prednisolone on symptoms and systemic inflammation in older adults with moderate to severe knee osteoarthritis: a randomized placebo-controlled trial	Wrong intervention
Abbott (2013)	Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee: a randomized controlled trial. 1: clinical effectiveness	Duplicate
Bennell (2005)	Efficacy of physiotherapy management of knee joint osteoarthritis: a randomised, double blind, placebo-controlled trial	Wrong intervention
Romanowski (2020)	Manual therapy (postisometric relaxation and joint mobilization) in knee pain and function experienced by patients with rheumatoid arthritis: a randomized clinical pilot study	Wrong indication
Cheawthamai (2014)	A comparison of home-based exercise programs with and without self-manual therapy in individuals with knee osteoarthritis in community	Wrong intervention
Khademi-Kalantari (2014)	Effects of non-surgical joint distraction in the treatment of severe knee osteoarthritis	Wrong intervention
Schencking (2013)	A comparison of Kneipp hydrotherapy with conventional physiotherapy in the treatment of osteoarthritis: a pilot trial	Wrong indication
Espí-López (2017)	Effectiveness of inclusion of dry needling in a multimodal therapy program for patellofemoral pain: a randomized parallel-group trial	Wrong intervention
Safran-Norton (2019)	A consensus-based process identifying physical therapy and exercise treatments for patients with degenerative meniscal tears and knee OA: the TeMPO physical therapy interventions and home exercise program	Wrong study design

Rafiq (2021)	The effect of rehabilitation protocol using mobile health in overweight and obese patients with knee osteoarthritis: a clinical trial	Wrong intervention
Weleslassie (2021)	Effectiveness of mobilization with movement on the management of knee osteoarthritis: a systematic review of randomized controlled trials	Wrong study design
Safran-Norton (2019)	A consensus-based process identifying physical therapy and exercise treatments for patients with degenerative meniscal tears and knee OA: the TeMPO physical therapy interventions and home exercise program	Wrong study design
Grindstaff (2014)	Manual therapy directed at the knee or lumbopelvic region does not influence quadriceps spinal reflex excitability	Wrong indication
Stanton (2018)	Illusory resizing of the painful knee is analgesic in symptomatic knee osteoarthritis	Wrong intervention
Hart (2000)	Combination of manual physical therapy and exercises for osteoarthritis of the knee	Wrong study design
Deyle (2012)	Knee OA: which patients are unlikely to benefit from manual PT and exercise?	Wrong study design
Gomiero (2018)	Sensory-motor training versus resistance training among patients with knee osteoarthritis: randomized single-blind controlled trial	Wrong intervention
Jardine (2012)	The effect of osteopathic manual therapy on the vascular supply to the lower extremity in individuals with knee osteoarthritis: A randomized trial	Wrong intervention
Abbott (2019)	Incremental clinical effectiveness and cost effectiveness of providing supervised physiotherapy in addition to usual medical care in patients with osteoarthritis of the hip or knee: 2-year results of the MOA randomised controlled trial	Wrong patient population
Robbins (2021)	Low-level laser therapy and static stretching exercises for patients with knee osteoarthritis: a randomised controlled trial	Wrong intervention
Pereira Garbi (2021)	Aquatic physiotherapy in the functional capacity of elderly with knee osteoarthritis	Wrong intervention
Schilke (1996)	Effects of muscle-strength training on the functional status of patients with osteoarthritis of the knee joint	Wrong intervention
Altmis (2018)	Mobilization with movement and kinesio taping in knee arthritis—evaluation and outcomes	Wrong intervention
Goslinska (2020)	Wireless motion sensors-useful in assessing the effectiveness of physiotherapeutic methods used in patients with knee osteoarthritis-preliminary report	Wrong intervention
Pinto (2013)	Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee. 2: economic evaluation alongside a randomized controlled trial	Wrong intervention
Sayers (2012)	Effect of high-speed power training on muscle performance, function, and pain in older adults with knee osteoarthritis: a pilot investigation	Wrong intervention
Bennell (2005)	Efficacy of physiotherapy management of knee joint osteoarthritis: a randomised, double blind, placebo-controlled trial	Duplicate

Supplemental appendix D: Study characteristics

Primary author and year of publication	Stage of knee OA	Primary outcome(s)	Treatment groups and participant characteristics*
Abbott (2015)[32]	All Stages	Pain; Stiffness; Physical Function	Exercise therapy without booster sessions (n=19 [8m/11f], 64 yr, BMI=29.2) Exercise therapy with booster sessions (n=19 [8m/11f], 65 yr, BMI=30.2) Exercise therapy plus manual therapy with no booster sessions (n=18 [6m/12f], 61 yr, BMI=27.6) Exercise therapy plus manual therapy with booster sessions (n=19 [7m/12f], 64 yr, BMI=29.8)
Ali (2016)[33]	All Stages	Pain; Stiffness; Physical Function	Knee mobilization plus exercise (n=25 [numbers specific to gender not provided], participant age data not provided, BMI not provided) Electrophysical agents plus exercise (n=25 [numbers specific to gender not provided], participant age data not provided, BMI not provided)
Alkhawajah (2019)[34]	Chronic	Pain; Stiffness; Physical Function	Mobilization with movement (n=20 [13m/7f], 56.5 yr, BMI=32.6) Sham mobilization (n=20 [12m/8f], 56.6 yr, BMI=33.3)
Altinbilek (2018)[35]	Chronic	Pain; Stiffness; Physical Function	Knee mobilization plus exercise (n=44 [5m/39f], 53.9 yr, BMI=32.3) Sham (n=15 [5m/10f], 56.9 yr, BMI=30.9)
Bhagat (2020)[36]	Chronic	Pain; Physical Function	Mobilization with movement (n=15 [5m/10f], 53.7 yr, BMI=?) Pragmatic Lumbar Spine Treatment (n=43 [27m/16f], 48.1 yr, BMI=?)
Bove (2018)[37]	Bove	Pain; Stiffness; Physical Function	Exercise (n=75 [23m/52f], 58.3 yr, BMI=30.1) Exercise plus booster (n=76 [25m/51f], 58.4 yr, BMI=31.4) Exercise plus manual therapy (n=75 [26m/49f], 58.0 yr, BMI=31.1) Exercise plus manual therapy plus booster (n=74 [27m/47f], 58.5 yr, BMI=31.7)
Courtney (2016)[38]	Chronic	Pain	Knee mobilization (n=29 [13m/16f], 59.4 yr, BMI=36.9) Hands-on cutaneous input (Sham) (n=29 [13m/16f], 59.4 yr, BMI=36.9)
Crossley (2015)[39]	Subacute and Chronic	Rate of Change of Pain Severity; Pain; Pain; Stiffness; Physical Function	Knee mobilization (n=44 [20m/24f], 56 yr, BMI=27.2) Education (Control) (n=48 [19m/29f], 53 yr, BMI=27.9)
Cruz-Montecinos (2016)[40]	Not Provided	Muscle Activation; Pain; Physical Function; Stiffness	Knee mobilization (n=8 [numbers specific to gender not provided], 64.4 yr, BMI not provided) Control (n=8 [numbers specific to gender not provided], 61 yr, BMI not provided)

Deyle (2005)[14]	Not Provided	Pain; Stiffness; Physical Function	Knee mobilization with exercise (n=60 [23m/37f], 64 yr, BMI=25.3) Home exercise program (n=60 [16m/44f], 62.2 yr, BMI=28.0) Knee mobilization with exercise group non-completers (n=6 [3m/3f], 62.2 yr, BMI=28.0) Home exercise program group non-completers (n=8 [4m/4f], 63.8 yr, BMI=28.0)
Deyle (2000)[13]	Not Provided	Pain; Stiffness; Physical Function	Knee mobilization and exercise (n=42 [15m/27f], 60 yr, BMI=31.1) Subtherapeutic ultrasound and exercise (placebo) (n=41 [19m/22f], 62 yr, BMI=30.4)
Dwyer (2015)[41]	Chronic	Pain; Stiffness; Physical Function; ROM; Patient Perceived Satisfaction	Knee mobilization (n=26 [7m/19f], 63.5 yr, BMI=28.6) Exercise (n=26 [11m/15f], 60.9 yr, BMI=30.8) Knee mobilization and exercise (n=26 [11m/15f], 62.2 yr, BMI=30.6)
Fitzgerald (2016)[42]	All Stages	Pain; Stiffness; Physical Function	Knee manual therapy and exercise and booster (n=74 [27m/47f], 58.5 yr, BMI=31.7) Knee manual therapy and booster (n=75 [26m/49f], 58.0 yr, BMI=31.1) Exercise and booster (n=75 [25m/51f], 58.4 yr, BMI=31.4) Exercise (n=75 [23m/52f], 58.3 yr, BMI=30.1)
Forestier (2014)[43]	Chronic	Stiffness; Physical Function; Quality of Life	Knee mobilization (n=113 [47m/66f], 64.1 yr, BMI=31.1) Control (n=101 [42m/59f], 64.8 yr, BMI=28.9)
Jeyakumar (2017)[44]	Subacute	Pain; ROM	Knee mobilization (Mulligan) (n=20 [12m/8f], 51 yr, BMI not provided) Knee mobilization (Maitland) (n=20 [11m/9f], 50 yr, BMI not provided) Conventional physiotherapy (n=20 [8m/12f], 52 yr, BMI not provided)
Jin (2017)[45]	Not Provided	Pain; Stiffness; Physical Function;	Knee manual therapy (n=40 [9m/31f], 59.3 yr, BMI=24.97) NSAIDs (n=40 [8m/32f], 61.9 yr, BMI=26.07)
Kaya Mutlu (2018)[46]	Not Provided	Pain; Stiffness; Physical Function;	Knee mobilization (MWM) (n=21 [10m/21f], 54.19 yr, BMI=30.82) Knee mobilization (Accessory mobs) (n=21 [5m/16f], 56.29 yr, BMI=30.74) Electrotherapy (n=22 [3m/19f], 57.77 yr, BMI=32.59)
Kornkamon (2019)[47]	Not Provided	Pain; ROM; Function	PT generated manual therapy (n=8 [2m/6f], 74.0 yr, BMI not provided) Self-manual therapy (n=8 [2m/6f], 72.25 yr, BMI not provided) Control group (n=8 [0m/8f], 73.25 yr, BMI not provided)
Lalit (2012)[48]	Not Provided	Proprioception; Pain; Stiffness; Physical Function	Knee mobilization (Maitland) (n=30 [numbers specific to gender not provided], 54.67 yr, BMI not provided) Knee mobilization (Mulligan) (n=30 [numbers specific to gender not provided], 51.67 yr, BMI not provided)
Lizis (2019)[49]	Chronic	Pain	Knee mobilization (n=64 [33m/37f], 62.3 yr, BMI=24.15) Exercise (n=64 [30m/40f], 62.0 yr, BMI=23.57)

Mahmooda (2020)[50]	Subacute	Pain; ROM; Stiffness; Physical Function	Knee mobilization (Mulligan) (n=15 [0m/15f], participant age data not provided, BMI not provided) Myofascial release (n=15 [0m/15f], participant age data not provided, BMI not provided)
Moss (2007)[51]	Not Provided	Pain; Stiffness; Physical Function; PPT	Knee mobilization (n=38 [numbers specific to gender not provided], participant age data not provided, BMI not provided) Manual contact (No mobilization) (n=38 [numbers specific to gender not provided], participant age data not provided, BMI not provided) Control (n=38 [numbers specific to gender not provided], participant age data not provided, BMI not provided)
Narang (2014)[52]	All Stages	Pain; Stiffness; Physical Function	Knee mobilization (n=15 [numbers specific to gender not provided], participant age data not provided, BMI not provided) Routine physiotherapy (n=15 [numbers specific to gender not provided], participant age data not provided, BMI not provided)
Nigam (2021)[53]	Not Provided	Pain; Stiffness; Physical Function	Knee mobilization (MWM) plus exercise and moist heat (n=20 [8m/12f], 58.5 yr, BMI=26.2) Exercise and moist heat (n=20 [7m/13f], 59.4 yr, BMI=25.6)
Pollard (2008)[54]	Chronic	Pain	Knee mobilization (n=26 [18m/8f], 56.5 yr, BMI not provided) Control (n=17 [11m/6f], 54.6 yr, BMI not provided)
Pozsgai (2022)[55]	Not Provided	Pain Pressure Threshold; Pain; Physical Function; Strength	Knee mobilization (n=20 [0m/20f], 70.4 yr, BMI=19.07) Sham (n=20 [0m/20f], 66.9 yr, BMI=30.95)
Pryymachenko (2021)[56]	Not Provided	Incremental Cost-Effectiveness; Incremental Net Monetary Benefits	Manual therapy and exercise and booster (n=19 [7m/12f], 64 yr, BMI=29.8) Manual therapy and exercise (n=18 [6m/12f], 61.2 yr, BMI=27.6) Exercise and booster (n=19 [7m/12f], 65.3 yr, BMI=30.0) Exercise (n=19 [8m/11f], 63.9 yr, BMI=29.2)
Rao (2018)[57]	Not Provided	Pain; Physical Function; Stiffness	Knee mobilization (Maitland) (n=32 [numbers specific to gender not provided], participant age data not provided, BMI not provided) Knee mobilization (Mulligan) (n=31 [numbers specific to gender not provided], participant age data not provided, BMI not provided)
Razek (2014)[58]	Chronic	Pain; Stiffness; Physical Function; ROM	Knee mobilization with traditional physiotherapy (n=15 [5m/10f], 44.47 yr, BMI=29.09) Traditional physiotherapy (n=15 [4m/11f], 50.13 yr, BMI=28.45)

Reza (2021)[59]	Not Provided	Pain; Stiffness; Physical Function	Manual therapy and exercise (n=16 [9m/7f], 54.19 yr, BMI not provided) Exercise (n=16 [10m/6f], 53.25 yr, BMI not provided)
Sharma (2013)[60]	Less Than 1 Year	Pain; Stiffness; Physical Function; ROM	Manual therapy and exercise (n=20 [numbers specific to gender not provided], participant age data not provided, BMI not provided) Exercise (n=20 [numbers specific to gender not provided], participant age data not provided, BMI not provided)
Sit (2018)[61]	Subacute and Chronic	Pain; Stiffness; Physical Function	Patellar mobilization therapy (n=104 [19m/85f], 59.4 yr, BMI not provided) Control (n=104 [22m/82f], 60.9 yr, BMI not provided)
Syed (2014)[62]	Not Provided	Pain	Myofascial mobilization and exercise (n=20 [3m/17f], 53.25 yr, BMI not provided) Maitland mobilization and exercise (n=20 [7m/13f], 52.15 yr, BMI not provided)
Taj (2023)[63]	All Stages	ROM; Pain; Physical Function	Knee mobilization (n=24 [4m/20f], 45.3 yr, BMI not provided) Pain release group (n=24 [9m/15f], 45.4 yr, BMI not provided
Tucker (2003)[64]	Not Provided	Pain; Physical Function; ROM	Manual therapy (n=30 [12m/18f], 61.2 yr, BMI not provided) Sham (n=30 [11m/19f], 57.4 yr, BMI not provided)
Witwit (2022)[65]	Chronic	Pain; ROM	Mobilization (n=21 [7m/14f], 54.8 yr, BMI=31.29) Muscle energy technique (n=21 [9m/12f], 52.0 yr, BMI=31.56)

Abbreviations: f, females; m, males; n, number of subjects; PPT, pain pressure threshold; ROM, range of motion; yr, age in years
*Group participant characteristics expressed as (number of subjects [males/females], mean age, mean Body Mass Index (BMI)

Supplemental appendix E: Manual therapy interventions

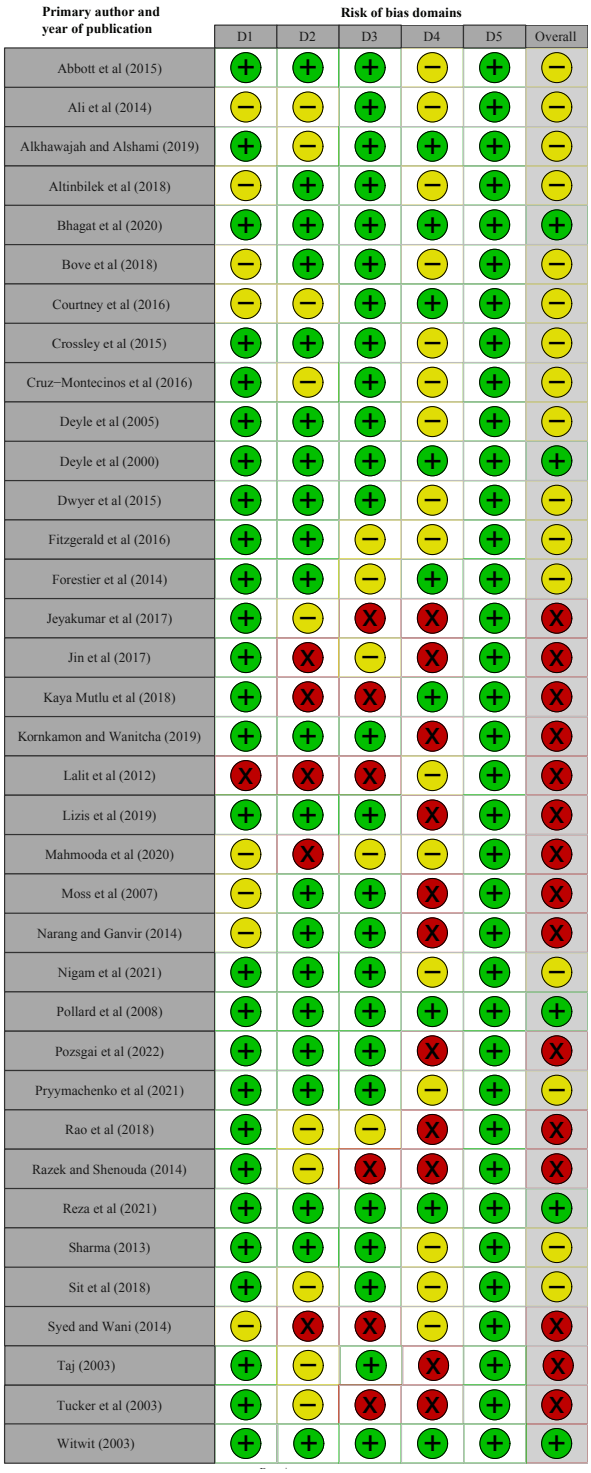
Primary author and year of publication	Total # of participants	Length of follow-up	Manual therapy interventions
Abbott (2015)[32]	N=75	1 year	Non-thrust joint mobilization directed at tibiofemoral and patellofemoral joints, with the option to perform techniques on hip, ankle, tibiofibular joints, and lumbopelvic spine, on an as needed basis. Twelve 30–45-minute treatment sessions.
Ali (2016)[33]	N=50	4 weeks	Maitland mobilization with distraction directed at tibiofemoral and patellofemoral joints. Twelve 30-minute treatment sessions.
Alkhawajah (2019)[34]	N=40	2 days	Mulligan mobilization with movement (MWM) directed at tibiofemoral joint (2 sets of 10 repetitions). One treatment session. No information provided regarding duration of each manual therapy session.
Altinbilek (2018)[35]	N=59	4 weeks	Osteopathic manipulative treatment directed at tibiofemoral and patellofemoral joints. Each technique was performed in one-minute intervals. One treatment session with three minutes of mobilization and three minutes of joint compression.
Bhagat (2020)[36]	N=58	Immediate	Mulligan MWM directed at tibiofemoral joint (3 sets of 10 repetitions). One treatment. No information provided regarding duration of each manual therapy session.
Bove (2018)[37]	N=300	2 years	Non-thrust joint mobilization directed at tibiofemoral joint, with the option to perform techniques on hip, ankle, and foot, on an as needed basis. Twelve treatment sessions, with manual therapy component lasting 15-20 minutes per session.
Courtney (2016)[38]	N=58	2 weeks	Oscillatory joint mobilization directed at the tibiofemoral joint (3 minutes x 2 repetitions). One treatment session. No information provided regarding duration of each manual therapy session.
Crossley (2015)[39]	N=92	9 months	Joint mobilization directed at tibiofemoral and patellofemoral joints, plus soft tissue mobilization. Eight treatment sessions. No information provided regarding

			duration of each manual therapy session.
Cruz-Montecinos (2016)[40]	N=16	1 week	Grade II Maitland joint mobilization directed at tibiofemoral and patellofemoral joints, plus soft tissue mobilization. One treatment session with manual therapy lasting about 40 minutes per patients.
Deyle (2005)[14]	N=134	1 year	Joint mobilization, directed at tibiofemoral and patellofemoral joints, as well as hip, ankle, tibiofibular joints, and lumbopelvic spine, on an as needed basis, plus soft tissue mobilization and stretching. Eight 30-minute treatment sessions.
Deyle (2000)[13]	N=83	1 year	Joint mobilization, directed at tibiofemoral and patellofemoral joints, as well as hip, ankle, tibiofibular joints, and lumbopelvic spine, on an as needed basis, plus soft tissue mobilization and stretching. Eight 30-minute treatment sessions.
Dwyer (2015)[41]	N=52	5 weeks	Thrust and non-thrust joint mobilization directed at tibiofemoral and patellofemoral joints, as well as the hip, foot, and spine. Six 20-minute treatment sessions.
Fitzgerald (2016)[42]	N=300	1 year	Non-Thrust joint mobilization directed at tibiofemoral joint, with the option to perform techniques on hip, ankle, and foot, on an as needed basis. Twelve treatment sessions, with manual therapy component lasting 15-20 minutes per session.
Forestier (2014)[43]	N=214	3 weeks	Joint mobilization directed at the knees, hips, ankles, spine, shoulders, and wrists, plus soft tissue mobilization. Three 25-minute treatment sessions.
Jeyakumar (2017)[44]	N=60	3 weeks	Mulligan MWM directed at the tibiofemoral joint or Maitland's MWM directed at the tibiofemoral joint. Both groups received 3 weeks of daily sessions including 3 bouts of the respective treatment for 30-seconds each.
Jin (2017)[45]	N=80	6 weeks	Joint mobilization and stretching directed at the tibiofemoral joint, plus soft tissue mobilization. Twelve 20-minute treatment sessions.
Kaya Mutlu (2018)[46]	N=64	1 year	Mulligan MWM directed at the tibiofemoral joint, or passive joint mobilization (grade I-IV) directed at the tibiofemoral and patellofemoral joints. Twelve 50-minute treatment sessions.
Kornkamon (2019)[47]	N=24	Not stated	Joint mobilization directed at tibiofemoral and patellofemoral joints, plus soft tissue mobilization. No information provided regarding number of treatment

			sessions or duration of each manual therapy session.
Lalit (2012)[48]	N=60	5 days	Mulligan MWM directed at the tibiofemoral joint (3 sets of 3 repetitions), or Maitland's grade II-III joint mobilization (no dosage provided) directed at the tibiofemoral and patellofemoral joints. Three treatment sessions. No information provided regarding duration of each manual therapy session.
Lizis (2019)[49]	N=128	5 weeks	Joint mobilization (grade III) directed at the tibiofemoral and patellofemoral joints. Each mobilization was performed for 30 repetitions. Ten 30-45-minute treatment sessions.
Mahmooda (2020)[50]	N=30	2 weeks	Mulligan MWM directed at tibiofemoral joint (no dosage provided). Ten treatment sessions. No information provided regarding duration of each manual therapy session.
Moss (2007)[51]	N= 114	Not stated	Joint mobilization directed at the tibiofemoral joint (single 9-minute repetition of non-noxious mobilization). One 9-minute treatment session.
Narang (2014)[52]	N=30	15 days	Kaltenbohn mobilization directed at tibiofemoral and patellofemoral joints (no dosage provided). No information provided regarding number of treatment sessions or duration of each manual therapy session.
Nigam (2021)[53]	N=40	6 months	Mulligan MWM directed at the tibiofemoral joint (3 sets of 6-10 repetitions). Six treatment sessions. No information provided regarding the duration of each manual therapy session.
Pollard (2008)[54]	N=43	4 weeks	Joint mobilization directed at the patellofemoral joint, including myofascial manipulation (no dosage provided). Three treatment sessions. No information provided regarding the duration of each manual therapy session.
Pozsgai (2022)[55]	N=40	2 weeks	Maitland joint mobilization (grade III-IV) directed at tibiofemoral joint (30 seconds x 2 repetitions). One treatment session.
Pryymachenko (2021)[56]	N=56	2 years	Joint mobilization directed at the knee joint, plus soft tissue mobilization (no dosage provided). Twelve treatment sessions. No information provided regarding the duration of each manual therapy session.
Rao (2018)[57]	N=63	Immediate	Maitland joint mobilization (grade I-IV) (3 seconds – 5 minutes duration) and Mulligan MWM (no dosage provided) directed at the tibiofemoral joint. Two

			treatment sessions. No information provided regarding the duration of each manual therapy session.
Razek (2014)[58]	N=30	4 weeks	Mulligan MWM (No dosage provided). Twelve treatment sessions. No information provided regarding the duration of each manual therapy session.
Reza (2021)[59]	N=32	4 weeks	Joint thrust (no dosage provided) joint mobilizations were directed at the tibiofemoral joint, and non-thrust (10 repetitions) joint mobilizations directed at the patellofemoral joint. Six treatment sessions. No information provided regarding the duration of each manual therapy session.
Sharma (2013)[60]	N=40	4 weeks	Maitland joint mobilization (grade III-IV) directed at the tibiofemoral and patellofemoral joints (30 seconds x 2-6 repetitions), plus muscle stretching. No information provided regarding number of treatment sessions or duration of each manual therapy session.
Sit (2018)[61]	N=208	24 weeks	Joint mobilization directed at the patellofemoral joint (5 minutes). Three treatment sessions.
Syed (2014)[62]	N=40	2 weeks	Maitland joint mobilization directed at tibiofemoral joint (gr II x 5 repetitions). Treatments provided on alternating days for 2 weeks. No information provided regarding the duration of each manual therapy session.
Taj (2023)[63]	N=48	6 weeks	Maitland joint mobilization directed at the tibiofemoral and patellofemoral joints (3 repetitions, grade and duration not specified), plus muscle stretches for hamstrings, gastrocnemius, soleus, and rectus femoris. No information provided regarding number of treatment sessions or duration of each manual therapy session.
Tucker (2003)[64]	N=60	3 weeks	Thrust joint mobilization directed at the tibiofemoral and patellofemoral joints (no dosage provided). Eight treatment sessions. No information provided regarding the duration of each manual therapy session.
Witwit (2022)[65]	N=42	4 weeks	Non-thrust joint mobilization (grade II-III) directed at the tibiofemoral joint (1 minute x 3 repetitions). Twelve treatment sessions.

Supplemental appendix F: Individual trial RoB-2 scores



Abbreviations: RoB-2, Cochrane risk of bias 2.0