

Supplementary Table 1. Individual study population and quality assessment of eligibility criteria (1 indicates quality indicator present, 0 not present).

First Author Year	Population	Inclusion items			Exclusion items				
Pharmaceutical & Nutraceutical		Clear definition: symptom location	Clear definition: structural diagnosis	Clear definition: clinical diagnosis	History of trauma	History of dislocation	Evidence of subluxation or malalignment	History of surgery	Other reason for knee symptoms
Hart 2019 [44]	PFP/CP (USA)	0	0	1	0	1	1	1	1
Nakhostin-Roohi 2016 [60]	women athletes with AKP (Iran)	0	0	0	0	0	0	0	1
Örsçelik 2015 [47]	Military with unilateral PFP (Turkey)	1	0	0	0	1	1	0	1
Singer 2011 [57]	AKP (Australia)	1	0	1	0	1	0	1	1
Marti-Bonmati 2009 [56]	degenerative patellar conditions (chondromalacia or OA) not requiring surgery (Spain)	0	1	0	1	1	0	0	1
Kannus 1992 & 1999 [58,59]	patients with PFP (Finland)	1 As above	0	1	0	0	0	0	1
Suter 1998 [49]	AKP, Sports Medicine clinic database (Canada)	1	0	0	1	1	0	1	1
Raatikainen 1990 [48]	CP patients who attended a Sports Medicine Clinic (Finland)	1	1	1	0	0	0	0	1
Fulkerson 1986 [55]	AKP (USA)	1	0	0	0	0	0	0	0
Antich 1986 [45]	Physical therapy patients with knee	0	0	0	0	0	0	0	0

	extensor mechanism disorders (USA)									
Bentley 1981 [54]	CP patients (England)	1	1	1	0	0	1	0	0	
Matoso 1980 [46]	CP patients in hospital rheumatology department who had opted for medication instead of surgery (Switzerland)	0	1	1	0	0	0	0	0	
Darracott 1973 [53]	PFP in military members attending Army Medical Rehabilitation Unit (England)	1	0	1	0	0	0	0	0	
Surgical										
Joseph 2020 [43]	isolated PFOA (UK)	0	0	1	0	0	0	1	1	
Odgaard 2018 [40]	isolated PFOA (Denmark)	0	1	0	0	0	1	0	1	
Pagenstert 2012 [50]	patients with lateral patellar hypercompression syndrome (Switzerland)	1	0	1	0	1	1	0	1	
Kettunen 2007 & 2012 [41,42]	hospital or outpatient clinic, PFP (Finland)	1	0	1	1	1	0	1	1	
Owens 2002 [51]	recreational women athletes undergoing arthroscopy for isolated patellar	0	1	0	1	1	1	0	1	

	cartilage lesions (USA)									
O'Neill 1997 [61]	athletic patients with AKP and lateral patellar tilting (USA)	1	0	1	0	1	1 sub/0 mal	0	1	
Hejgaard 1982 [52]	patients admitted to hospital surgical department for CP (Denmark)	1	1	1	0	0	1	0	1	

AKP = anterior knee pain; PFP = patellofemoral pain; OA = osteoarthritis; CP = chondromalacia patella; PFOA = patellofemoral osteoarthritis; sub = subluxation; mal = malalignment.

Supplementary Table 2. GRADE assessment for pain outcomes

Intervention	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	GRADE certainty
Pharmaceutical & Nutraceutical							
<i>Oral</i>							
NSAIDS	4 RCTs	One moderate RoB [54] Three high RoB [49,55,56] -1	No 0	No 0	CI contains meaningful ES, n<400 -1	Not tested (n<10) 0	Low
Chloroquine	1 RCT	High RoB [46] -1	One study -1	Pain outcome unknown validity/reliability -1	CI not reported, n<400 -1	Not tested (n<10) 0	Very low
Glucosamine	1 RCT	High RoB [56] -1	One study -1	No 0	CI exceeds meaningful ES, n<400 -1	Not tested (n<10) 0	Very low
Pharmaceutical & Nutraceutical							
<i>Injections</i>							
Glycosaminoglycan Polysulphate	2 RCTs	Two High RoB [48,58,59] -1	Yes -1	No 0	CI contains meaningful ES, n<400 -1	Not tested (n<10)	Very low
Hyaluronic acid	1 RCT	Low RoB [44] 0	One study -1	No 0	CI contains meaningful ES; <400 participants -1	Not tested (n<10)	Low
Platelet-rich plasma	1 RCT	High RoB [47] -1	One study -1	Military; Dose is comparator -1	CI spans meaningful ES, n<400 -1	Not tested (n<10) 0	Very low
Botox	1 RCT	Moderate RoB [57] 0	One study -1	No 0	CI contains meaningful ES, n<400 -1	Not tested (n<10) 0	Low
Anabolic steroids	1 RCT	High RoB [53] -1	One study -1	Military only, 93% men -1	CI exceeds meaningful ES, n<400 -1	Not tested (n<10) 0	Very low

Pharmaceutical & Nutraceutical							
<i>Transdermal</i>							
NSAIDs (phonophoresis)	1 RCT	Moderate RoB [60] 0	One study -1	Women athletes only -1	Values not reported, n<400 -1	Not tested (n<10) 0	Very low
Corticosteroids (iontophoresis, phonophoresis)	1 RCT	High RoB [45] -1	One study -1	Vague diagnosis, sex not reported -1	CI spans meaningful ES, n<400 -1	Not tested (n<10) 0	Very low
Surgical							
<i>Arthroscopic</i>							
Standard arthroscopy	1 RCT	High RoB [41,42] -1	One study -1	No 0	CI spans meaningful ES, n<400 -1	Not tested (n<10) 0	Very low
Radiofrequency debridement	1 RCT	High RoB [51] -1	One study -1	Women only, isolated PF cartilage lesions -1	CI exceeds meaningful ES, n<400 -1	Not tested (n<10) 0	Very low
Surgical							
<i>Open surgeries</i>							
Lateral retinacular surgery	2 RCT	Two high RoB [50,61] -1	No 0	Diagnosis specific to lateral patellar alignment or hypercompression -1	CI contains meaningful ES, n<400 -1	Not tested (n<10) 0	Very low
Anterior tibial tuberosity displacement	1 RCT	High RoB [52] -1	One study -1	CP surgical candidates 0	CI exceeds meaningful ES, n<400 -1	Not tested (n<10) 0	Very low
Patellofemoral arthroplasty	2 RCT	One low RoB[40] One moderate RoB[43] 0	Effects in different directions but not significant so results similar	Isolated PFOA 0	CI spans meaningful ES, n<400 -1	Not tested (n<10) 0	Moderate

RoB = risk of bias; RCT = randomized controlled trial; ES = effect size; PFOA = patellofemoral osteoarthritis; CI = confidence intervals

Decision guidelines for scoring: RoB: -1 for high RoB (low and moderate no reduction); Inconsistency: -1 if results differ among studies regarding significance or direction of effect; or if not enough evidence to assess (e.g. only 1 study); Indirectness: -1 if population characteristics limit generalizability; if comparator has unknown efficacy or if pain outcome is not a validated measure; Imprecision: -1 if sample size <400, or if confidence intervals are wide and either contain clinically meaningful benefit (meaningful defined as SMD 0.5 or RR 25%), or span both clinically meaningful benefit and harm. Note if large ES (i.e. CI exceeds clinically meaningful difference), we only upgraded if study was also rated low RoB); Publication bias: only assess if at least 10 studies for every treatment comparison.