Table 1

Template for Intervention Description and Replication (TIDieR) table of interventions for included trials.

1a. TIDieR table of interventions for included trials that have biophysical agents as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Jing et al.[1] 2024	Exercise	NR	NR	NR	3 times a week for 6 weeks	The load intensity during training is set at 70% of the 1RM, adjusted every two weeks	NR	Strengthening exercises of quadriceps, gluteus maximus and gluteus medius including static hip bridges, wall squats, barbell hip thrusts, clamshell exercises, ball knee extensions, split squats and quadriceps resistance knee extensions
	Neuromuscular electrical stimulation	NR	Face-to-face	NR	3 times a week for 6 weeks	The stimulation intensity is adjusted every two weeks to maximise	NR	NMES was applied on the affected side's VM superimposed during muscle contraction to activate and strengthen the VM

						motor unit recruitment		The electrical stimulation waveform is square, with a pulse width of 400μs, a frequency of 50 Hz, and a current control below 100 mA
Albornoz-Cabello et al.[2] 2023	Exercise	Physical therapist	Face-to-face	NR	Daily over 3 weeks	The progression was performed according to the patient's sensations	NR	Exercise protocol for knee stability consisting of squats for concentric and eccentric strengthening of quadriceps, side step, bridge exercise for hamstrings, clam exercise for gluteus medius, soleus stretch standing, gastrocnemius stretch standing
	Monopolar dielectric diathermy	Physical therapist	Face-to-face	NR	10 sessions over 3 weeks	NR	NR	12 minutes of monopolar dielectric diathermy by

								emission of radiofrequency in pulsed emissions of 640 kHz and 30 V in dynamic application, with a continuous rotation and translational movement on the anterior surface of the knee
Mv et al.[3] 2023	Exercise	Physiotherapist	Face-to-face	NR	3 times a week for 10 weeks	NR	NR	Quadriceps strengthening exercises consisting of isometric quadriceps exercises, straight leg raise exercises and short arc knee extension exercise
	Neuromuscular electrical stimulation	NR	NR	NR	3 times a week for 10 weeks	NR	NR	Neuromuscular electrical stimuli were applied over the motor points of the VL and VM

								A biphasic pulsed current was used Frequency (Hz) is the number of pulses in one second (20-50 pulses per second)
Qayyum et al.[4] 2022	Exercise	NR	NR	NR	4 sessions per week for 4 weeks	NR	NR	Stretching exercises of quadriceps, ITB and calf muscles Quadriceps Strengthening, straight leg raises, hip Abduction and adduction exercises Hamstrings strengthening, dumbbell squats and wall squats were also included
	High power laser therapy	NR	NR	NR	8 consecutive sessions with an interval of 3 days	NR	NR	Participants were exposed to 120 seconds of 10W-laser with 120J/cm2 per therapy

Rodrigues et al.[5] 2022	Exercise	NR	Face-to-face	Laboratory	12 sessions, 2-3 times per week	The load of the 10RM test was re-evaluated 30 minutes before the fourth and eighth sessions	NR	The training protocol consisted of bilateral knee extension exercise in a seated leg extension machine at 60% of 10RM
	Anodal Transcranial direct current stimulation	NR	Face-to-face	Laboratory	12 sessions, 2-3 times per week	NR	NR	The anodic electrode was applied to the primary motor cortex bilaterally, located under the Cz electrode area, according to the international 10–20 EEG system. The reference electrode was placed on the orbitofrontal cortex contralaterally to the dominant leg of each subject, located

								under the electrode area Fp1 or Fp2
Albornoz-Cabello et al.[6] 2020	Exercise	NR	Home sessions	Patient's home	Daily over 3 weeks	NR	NR	The treatment consisted of home/gym prescription exercises including stretching exercises of hip muscles and static bike
	Monopolar dielectric diathermy	Physiotherapist	Face-to-face	NR	10 sessions over 3 weeks	NR	NR	Participants received monopolar dielectric diathermy by emission of radiofrequency treatment with a pulsed emission of 840 kHz and 30 V in dynamic application, with a continuous rotation and translational movement on the anterior surface of the knee

Celik et al.[7] 2020	Exercise	Physiotherapist	Face-to-face and home sessions	NR and patient's home	3 sessions a week, for 6 weeks	NR	NR	Knee and hip strengthening exercises consisting of isometric quadriceps strengthening, terminal knee extension, straight leg raise (with 10º hip external rotation), mini-squat (30º with soft ball), hip abduction, side-lying clam exercise, hamstring and calf stretch
	Superimposed neuromuscular electrical stimulation	Physiotherapist	Face-to-face	NR	3 sessions a week, for 6 weeks	NR	NR	NMES (stimulation frequency of 50 Hz and biphasic symmetrical square pulses lasting up to 400μs with an on-off ratio of 10:20 seconds and ramp up and ramp-down times of 1 second) superimposed on voluntary contraction

								was applied during two different exercises. 1) Isometric quadriceps strengthening (30 isometric contractions). 2) 0–30º terminal knee extension (30 isotonic contractions)
Talbot et al.[8] 2020	Exercise	NR	Home sessions	Patient's home	Daily for 9 weeks	Participants were trained according to their MVC	Weekly communication via email, text, or phone encouraged compliance with the protocol	Straight leg raises, quad sets, step-ups, and squats exercises
	Neuromuscular electrical stimulation	NR	NR and Home sessions	NR and Patient's home	Daily for 9 weeks	Adjustments to stimulation contraction intensity were made at each visit.	Staff contacted participants weekly by telephone, email, or text messages to record reported pain levels and treatment compliance	The stimulus was applied over the quadriceps. It was used a symmetrical square biphasic wave form waveform with output current that ranged from 0 to 70 mA. Parameters were set at variable pulse duration of 300 to 400μs; ramp time of

								1.0:0.50 s; frequency of 50 Hz; and duty cycle of 5 s-on/10s-off
Glaviano et al.[9] 2019	Exercise	Certified AT	Face-to-face	Laboratory	3 sessions a week, for 4 weeks	Exercises were individualized considering the individual impairments for ROM, patellar mobility and foot pronation and the maximal strength measure collected at baseline	Rehabilitation compliance was monitored 3 times per week during the sessions and recorded by the clinician	Strengthening exercises and balance training were completed throughout the study, whereas functional retraining tasks were introduced on the seventh visit and performed for the remainder of the study
	Patterned electrical neuromuscular stimulation	Certified AT	Face-to-face	Laboratory	3 sessions a week, for 4 weeks	NR	Rehabilitation compliance was monitored 3 times per week during the sessions and	The device uses a 50-Hz pulse frequency, 70-ls phase duration, and 200-millisecond stimulus train with an asymmetric biphasic

							recorded by the clinician	square-waved stimulus. Alternating rhythmic contractions were generated using 2 stimulation patterns to target the agonist muscles (VMO and gluteus medius) and antagonist muscles (hamstrings and adductors)
Nouri et al.[10] 2019	Exercise	NR	NR	NR	Daily over 3 months	NR	Patients were regularly contacted by the PM&R specialist in order to ensure their compliance with the exercise therapy program and check for potential complications	Quadriceps muscle strengthening program included isometric knee exercise and straight leg raising

	High-power laser	PM&R specialist	Face-to-face	NR	5 consecutive sessions, separated by 2-day interval	NR	NR	Pain Relief program (with 10 W and 120 J/cm2) for 120 seconds were exploited per therapy session
Iammarrone et al.[11] 2016	Exercise	Therapist	Home sessions	Patient's home	Daily for 6 weeks	Load increase was guided by pain reaction upon exertion	To enhance compliance, Patients received a tutorial with photographs, a text explaining exercises and a diary to register amount of exercising	Static and dynamic muscular exercises for quadriceps, adductor, and gluteal muscles. It also included balance and stretching exercises to loosen tight structures like hamstrings, iliotibial tract and patellar retinaculum.
	Pulsed electromagnetic fields	Therapist	Home sessions	Patient's home	4h per day for 6 weeks	NR	The stimulator had a timer to record the hours of therapy, allowing patient compliance to be monitored	The battery-operated device produced a pulsed signal with a square waveform, a peak magnetic field intensity of 1.5 mT, an active pulse duration of 1.3 ms with a frequency of 75 Hz and a duty-cycle of 10%

Bily et al.[12] 2008	Exercise	Physical therapist	Face-to-face	NR	Daily over 12 weeks	The pain level was taken into consideration for load management	Training protocols were controlled once a week for compliance	Leg and toe raise exercises, exercise in standing position with a rubber tube, toe raises, balance exercise, and bicycling
	Electric muscle stimulation	Physician	Home sessions	NR	Daily over 12 weeks	Pain tolerance and patient discomfort were taken into consideration for the intensity of the stimulation	Patients were asked to record each stimulation session to ensure compliance	Quadriceps stimulation The EMS device is a 2-channel stimulator, which produces asymmetric biphasic pulses for a duration of .26ms. Maximal amplitude is 80mA, with maximal output of 50V at 500 Ω. The stimulation frequency was set at 40Hz, with a duty cycle of 5 seconds on and 10 seconds off
Akarcali et al.[13] 2002	Exercise	NR	NR	NR	30 sessions over 6 weeks	The progression of load and exercises were individually	NR	Isometric and eccentric quadriceps exercises

					prescribed according to the level of perceived pain (pain level up to 5 was allowed)		
High voltage electrical stimulation	NR	NR	NR	5 times a week for 6 weeks	The intensity of stimulation was adjusted to a level which induced a contraction as close as to a maximum voluntary contraction	NR	High voltage pulsed galvanic stimulation with monophasic (twin-peak pulse) waveform and pulse duration of 65-75 µs was applied in the VMO. The intensity amplitude ranges from 1 to 100 c/s, with the pulse frequency of 60 c/s mode.

Abbreviation: NR, not reported; *NMES*, neuromuscular electrical stimulation; *AT*, athletic trainer; *ROM*, range of motion; *PM&R*, physical medicine and rehabilitation; *VL,* vastus lateralis; *VM,* vastus medialis; *IT,* iliotibial, *MVC,* maximal voluntary contraction; *VMO,* vastus medialis oblique; *RM,* repetition maximum; *EMS,* electrical muscle stimulation; *EEG,* electroencephalogram

1b. TIDieR table of interventions for included trials that have taping as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Lee et al.[14] 2023	Exercise	Physical therapist	Face-to-face and home exercises	Sports medicine centre and patient's home	Twice a day for one month	Exercise was performed in a pain free range	Compliance to the home exercise therapy was monitored by the physical therapists	Open kinetic-chain exercises, including multi-directional straight leg raise and knee extension with knee adduction Closed kinetic-chain exercises, including wall squat exercise with knee adduction and single-leg squat exercise in 50º below The hip and core muscle strengthening regimen was also performed
	Kinesio Taping	NR	Face-to-face and home sessions	Sports medicine centre and patient's home	Daily for one month	NR	NR	The taping was wrapped around the patella along the quadriceps tendon and muscle to protect and stabilise the patella
Şahan et al.[15] 2023	Exercise	Physiotherapist	Face-to-face	Patient's home	6 weeks	NR	NR	Stretching exercises of hamstring, gastrosoleus, TFL, and lumbar extensors Knee stabilisation, and strengthening exercises of quadriceps, glutaeus maximus, medius, and

								VMO
	Star Taping	Physiotherapist	Face-to-face	Orthopaedics and Traumatology Department of Kırıkkale University	6 weeks	NR	NR	Patellar star technique This method permits four-way stabilisation. First band is applied from the tibia to the femur to stabilise the downward and upward displacement of the patella. Second, a band is applied in mediolateral direction for stabilisation in this direction. Then, two other cross bands are applied against valgus and varus stress, respectively.
Songur et al.[16] 2023	Exercise	NR	Face-to-face and home sessions	NR and patient's home	Daily over 6 weeks (2 sessions per week was supervised)	NR	NR	Stretching and mobilisation exercises for the knee and hip regions, progressive strengthening exercises (knee extensions and hip abduction-external rotations), balance exercises, core exercises, and a walking and running program.

	Taping	NR	Face-to-face	NR	12 applications over 6 weeks	NR	NR	The McConnell patellar technique hypoallergenic tape was applied transversely to the anterior knee area. Then, athletic tape was applied, starting on the lateral edge of the patella. After pulling and tilting in the medial direction over the patella, it was terminated on the medial femoral condyle The femoral rotational taping technique hypoallergenic tape was applied to the area to be taped. Then, athletic tape was applied over the VMO. It was pulled diagonally outward from the front of the thigh and ended on the trochanter major
Basbug et al.[17] 2022	Exercise	Physiotherapist	Home exercises	Patient's home	12 weeks	For the resistance exercises, the Thera-band® length was adjusted relative	The researcher physiotherapist saw the patients every week and carried out exercise compliance and control	Progressive neuromuscular exercise program that included a stabilisation of the knee and hip joint

						to the Omni Scale		
	Taping	NR	Face-to-face sessions	NR	6 face-to-face sessions over 6 weeks	NR	NR	Knee: 'I' taping for accurate positioning of the tissue was applied to neutralise the patellofemoral joint Foot: correction taping to neutralise the subtalar joint by elevating the midtarsal joint and medial arch was applied
Arrebola et al.[18] 2020	Exercise	Physiotherapist	Face-to-face sessions	Clinic	Twice a week over 12 weeks	NR	NR	Hip and quadriceps strengthening exercises and motor control exercises
	Kinesio taping	Physiotherapist	Face-to-face sessions	Clinic	Once a week over 12 weeks	NR	NR	Patellar medialisation group: The therapeutic zone had a tension of >50% involving the entire lateral region of the patella Lateral rotation of femur and tibia group: The therapeutic zone was in a spiral format throughout the extension of the patients'

								lower limbs with tension of <50%. The tape involved the greater trochanter, the medial femoral condyle, and the lateral region of the leg
Ghourbanpour et al.[19] 2018	Exercise	NR	NR	NR	12 sessions during 4 weeks	NR	NR	Strengthening exercises for quadriceps muscles with emphasis on VMO, closed chain exercises, stretching exercises for hamstring muscles and ITB
	McConnell Patellar Taping	NR	Face-to-face	NR	12 sessions during 4 weeks	NR	NR	McConnell's method
Günay et al.[20] 2017	Exercise	Physiotherapist	Face-to-face sessions	Clinic	Twice a week over 6 weeks	NR	NR	Stretching exercise of quadriceps, hamstring, gastrocnemius and ITB and strengthening of quadriceps, gluteus medius
	Kinesio Taping	Taping specialist	Face-to-face sessions	Clinic	Twice a week over 6 weeks	NR	NR	Kinesio taping was applied with VMO facilitation and patellar functional correction

Akbaş et al.[21] 2011	Exercise	NR	Home sessions	Patient's home	6 weeks	NR	NR	Stretch of ITB/TFL complex, hamstring and quadriceps muscles and isometric and isotonic exercises for quadriceps, hip adductors, gluteus medius and maximus, open chain exercises like straight leg raise and leg raise with internal and external rotation and closed chain exercises like mini squat
	Kinesio Taping	NR	Face-to-face	NR	The kinesio taping was applied at five days intervals for 6 weeks	Individually designed	NR	Kinesiotape was applied on the VMO and quadriceps femoris to provide proprioceptive stimulation for muscle weakness (origin to insertion/muscle technique) and the VL, ITB/TFL and hamstring muscles were taped to relieve tightness (origin to insertion/muscle technique) and to allow natural patella movement in the femoral groove

Mousavi et al.[22] 2011	Exercise	NR	NR	NR	3 sessions per week over 6 weeks	NR	NR	Semi squat with adduction contraction
	Taping	NR	NR	NR	3 sessions per week over 6 weeks	NR	NR	Patellar lateralisation The tape was attached to the lateral border of patella and moving patella and tape medially, attaching to the medial femural condyle
Whittingham et al.[23] 2004	Exercise	Physiotherapist	Face-to-face sessions	Army Training Regiment Bassingbourn	Daily over 4 weeks	The program was graduated so that subjects only progressed to the next exercise when 3 sets of 10 repetitions of the previous exercise could be performed without pain	NR	Lower limb non-weight-bearing and weight-bearing exercise and stretching exercises
	McConnell Patellar Taping	Physiotherapist	Face-to-face sessions	Army Training Regiment Bassingbourn	Daily over 4 weeks	NR	NR	McConnell technique to correct specific patella malalignments (tilt, glide, or rotation)

Tunay et al.[24] 2003	Exercise	NR	NR	NR	15 sessions over 3 weeks	NR	NR	NR
	Patellar taping	NR	NR	NR	15 sessions over 3 weeks	NR	NR	NR
Clark et al.[25] 2000	Exercise	Physiotherapist	Face-to-face sessions and home sessions	NR and patient's home	6 face-to-face sessions over 3 months Patients were instructed to repeat the exercises every day	NR	Adherence in diary sheet	Hamstring. ITB, quadriceps, and gastrocnemius stretches Quadriceps and hip strengthening Functional isotonic exercises

	Taping	Physiotherapist	Face-to-face sessions	NR	6 face-to-face sessions over 3 months	During the fourth and fifth visits, taping was only applied during painful activities	NR	Tape was applied from the lateral border of the patella, pulling medially and upward over the medial femoral condyle

Abbreviation: NR, not reported; *TFL,* tensor fascia latae; *VMO,* vastus medialis oblique; *VL,* vastus lateralis; *ITB,* iliotibial band; *ITB/TFL,* iliotibial band/tensor fascia latae.

1c. TIDieR table of interventions for included trials that have whole-body vibration as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Wu et al.[26] 2022	Exercise	NR	Face-to-face	The Sports Medicine Rehabilitation Center, Guangzhou Sports University	3 times a week for 6 weeks	All the exercises were performed with VAS scores ≤ 3	NR	Knee-extensor, hip-abductor-rotator strengthening exercises in prone and supine positions with a TheraBand. Quadriceps and hip muscle resistance training were performed in the sitting and lateral recumbent positions with the TheraBand. Hip-knee muscle strengthening

							exercises were performed using straight leg lifting with sandbags
Whole-body vibration	NR	Face-to-face	The Sports Medicine Rehabilitation Center, Guangzhou Sports University	3 times a week for 6 weeks	Participants were asked to maintain the maximum flexion angle they could with pain level of VAS scores ≤ 3	NR	Patients were required to put the leg experiencing pain on the vibration platform of the whole-body vibration device (Galileo Med L, Novotech Inc, Germany), with hip and knee placed at 90º of flexion and the TheraBand being resisted by hip isometric antagonistic contractions in abduction-external rotation (intensity of 10RM). Otherwise, they were asked to maintain the maximum flexion angle they could with pain level of VAS scores ≤ 3

Rasti et al.[27] 2020	Exercise	Physiotherapist	Face-to-face	NR	3 sessions per week over 4 weeks	NR	NR	Quadriceps setting, supine straight leg raise, side-lying straight leg raise, single-leg stance. Self-stretches of the hamstring, quadriceps calf muscles and ITB. Dynamic exercises: single-leg cable machine exercises in flexion, extension and abduction directions, bilateral mini-squat and prone-plank exercises
	Whole-body vibration	Physiotherapist	Face-to-face	NR	3 sessions per week over 4 weeks	NR	NR	The participants stood on the whole-body vibration platform in a squatting position with 30 degrees of knee flexion. Each session included 2 sets of 60-s training with a 30-s interval between sets. The frequency

								and amplitude of whole-body vibration (Fit-Vibe Excel pro, GymnaUnighy NV, Bilzen, Belgium) were set at 50 Hz and 4mm, respectively
Yañez-Álvarez et al.[28] 2020	Exercise	Physiotherapist	Face-to-face	The AY360° Health and Sport Clinic (Seville, Spain).	3 sessions per week over 4 weeks	Based on a modified pain monitoring model, pain or discomfort only was allowed during the exercise execution if was acceptable (< 4/10) and if returned to the same baseline level of pain as before	NR	The designed program consisted of a single bout of 18-exercise routine. Isometric and isotonic exercises that involve core, gluteal and quadriceps muscles were selected.

						starting exercises within 24 h.		
	Whole-body vibration	Physiotherapist	Face-to-face	The AY360° Health and Sport Clinic (Seville, Spain).	3 sessions per week over 4 weeks	NR	NR	The frequency of the vibration platform was fixed at 40 Hz along the study and the amplitude of the vibration platform (peak-to-peak displacement) was set at 2mm in the first two weeks, and 4mm during the following two. The acceleration peak for these parameters were 3.2G and 6.4G respectively.
Corum et al.[29] 2018	Exercise	NR	Face-to-face and home sessions	Clinic and patient's home	3 days per week over 8 weeks	NR	NR	Stretching exercises consisting of quadriceps, hamstring, gastrocnemius and ITB stretching. Strength exercises consisting of isometric quadriceps setting, knee extensions,

							double-legged wall squat.
Whole-body vibration	NR	Face-to-face	Clinic	3 days per week over 8 weeks	NR	NR	The frequency of the vibration platform (amount of vibrations per second) was fixed at 35 Hz during the eight weeks and the amplitude of the vibration platform (peak-to-peak displacement) was set at 2 mm in the first four weeks, and 4 mm during the second four weeks of the study. Lower extremity stretching and strength exercises were performed. Lower extremity stretching exercises consisted of quadriceps, hamstring, gastrocnemius and iliotibial band stretching. Strength exercises consisting of lunge-step, semi-squat, ball-

								squeeze squat, and dynamic squat.

Abbreviation: NR, not reported, *VAS,* visual analogue scale; *ITB,* iliotibial band, *RM*¸ repetition maximum

1d. TIDieR table of interventions for included trials that have dry needling as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Ma et al.[30] 2020	Exercise	NR	NR	NR	Daily for 6 weeks	NR	NR	Stretching exercise of the quadriceps
	Dry needling	Clinicians who had received 4 years of dry needling	Face-to-face	NR	Once a week for 6 weeks	NR	NR	The 'clean technique' was performed with 0.35 × 40 mm disposable stainless-steel needles into three of the four quadriceps femoris muscles (vastus medialis, rectus femoris, and vastus lateralis)
Zarei et al.[31] 2020	Exercise	Physiotherapist	Face-to-face and Home sessions	Clinic and patient's home	2 sessions per week at the clinic and 3 sessions per week at home, for 4 weeks	Exercises were tailored based on individual symptoms and abilities	NR	Stretching and exercise for quadriceps and core

	Dry needling	Physiotherapist	Face-to-face	Clinic	Once a week for 4 weeks	NR	NR	The 'fast-in and fast-out technique' was performed with 0.30x50-mm and 0.30x100-mm needles into the gluteus medius ipsilateral and quadratus lumbarum contralateral
Sutlive et al.[32] 2018	Exercise	NR	Home sessions	Patient's home	Daily over 3 days	NR	NR	Isometric quadriceps femoris contractions and quadriceps stretching exercises
	Dry needling	NR	Face-to-face	NR	Single session	NR	NR	The 'clean technique' was performed with x 40 mm stainless steel acupuncture needle into three of four the quadriceps femoris muscles (vastus medialis, rectus femoris, vastus lateralis)

Abbreviation: NR, not reported

1e. TIDieR table of interventions for included trials that have knee brace as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Petersen et al.[33] 2016	Exercise	NR	Home sessions	Patient's home	12 60-minute supervised sessions of Krankengymnastik am Gerät over 6 weeks. Daily home 15-minute sessions of Patella move program	After a detailed analysis, the physical therapist creates a customised training plan for each patient	NR	The goal of Krankengymnastik am Gerät is to improve strength, coordination, endurance, and flexibility of the lower extremity, including the hip muscles Patella Move The five exercises are as follows: Sitting and flexing the knee, sitting and tensing the quadriceps, two-legged stance and squat, one-legged stance and squat, and one-legged stance and lateral pressure
	Patellar brace	Study physician	Home sessions	Patient's home	Patients were instructed to wear the brace over a minimum period	The brace was customised for the patient	NR	Medially directed force is applied to the patella by a tracking system.

					of 6 weeks for at least 6 h a day	by the study physician		
Denton et al.[34] 2005	Exercise	NR	Outpatient and home sessions	Outpatient and patient's home	Outpatient sessions were performed 3 times per week for 6 weeks Home sessions were performed once daily for 6 weeks	Patients continued to exercise in each phase until they demonstrated the ability to complete 30 repetitions of each exercise in that phase with a pain rating of less than 2 on the visual pain scale	NR	Straight leg raises, standing hip flexion straight leg raises with sport cord. Quadriceps, hamstring, iliotibial band and hip flexor stretches. 45º squats, 45º thoracic wall slides, resisted terminal knee extension in standing. Forward and lateral step-ups, step-downs, double-leg shuttle leg press, single-leg shuttle leg press, treadmill and stairmaster
	Knee brace	NR	Outpatient and home sessions	Outpatient and patient's home	The protonic brace system was used during both outpatient and home sessions	The resistance level for the knee brace was determined	NR	The system includes a brace set to resist knee flexion and a set of specific exercises to perform daily

						with the goal to identify the lowest level of resistance required by the patient to exercise without pain		Through resistance to knee flexion, the system is advertised to decrease retropatellar contact pressure due to changes in pelvis inclination and available hip rotation
Lun et al.[35] 2005	Exercise	Researcher	Home sessions	Patient's home	Daily for +51 days	NR	Subjects were given a journal to document when the exercises were done	Lower limb strengthening and stretching exercises
	Patellar bracing	Researcher	Home sessions	Patient's home	Daily for +51 days	NR	Subjects were given a journal to document when the brace was worn	Participants were fit with a patella brace (Special FX Knee Brace; Generation II Orthotics, Inc, Richmond, BC). The brace has a Y-shaped inferior patellar buttress pad and an external stabilisation strap to help control patellar movement. In those diagnosed with

								bilateral PFP, both knees were fit with a brace. Subjects were encouraged to wear their brace at all times except for sleep.

Abbreviation: NR, not reported; *PFP,* patellofemoral pain

1f. TIDieR table of interventions for included trials that have manual therapy as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Anwar et al.[36] 2022	Exercise	NR	Face-to-face	Outpatient physiotherapy department of Amin Welfare Teaching Hospital Sialkot, Pakistan	2 times a week during 3 weeks	NR	NR	Quadriceps isometric exercises
	Pain release phenomenon technique	NR	Face-to-face	Outpatient physiotherapy department of Amin Welfare	2 times a week during 3 weeks	NR	NR	Pain release phenomenon is a pain provoking technique, and the pain is resolved within 25-30

				Teaching Hospital Sialkot, Pakistan				seconds (for knee joint). Pain is evaluated at the range where it started. Pressure was maintained for 15-20 seconds. After getting release from pain within 15-20 seconds, PRP in a new range was applied with increase force, until a substantial amount of pain reduction was achieved.
Fatimah et al.[37] 2021	Exercise	NR	Face-to-face	The Lady Reading Hospital and Hayatabad Medical Complex, Peshawar, Pakistan	3 sessions per week during 4 weeks	NR	NR	Exercises included semi-squatting, straight leg raise and hamstring stretch, quadriceps isometrics, terminal knee extension with elastic band, adductor squeeze and hip abduction in standing position with elastic band

	Tibiofemoral mobilisation	NR	Face-to-face	The Lady Reading Hospital and Hayatabad Medical Complex, Peshawar, Pakistan	3 sessions per week during 4 weeks	NR	NR	Tibiofemoral mobilisation through anterior-posterior anterior-posterior glide, which is the Kaltenborn technique
Telles et al.[38] 2016	Exercise	Physiotherapist	Face-to-face and home sessions	NR and patient's home	Supervised: 2 sessions per week during 5 weeks. Home sessions: daily during 5 weeks.	Exercise intensity was determined by participant's ability to complete 10 repetitions for a given exercise	NR	Five exercises to strengthen hip muscles were performed lying on the side, sitting, and standing (three sets of ten repetitions) with ankle cuff weights or elastic bands.
	Myofascial techniques	Physiotherapist	Face-to-face	NR	NR	The therapist used thumbs to apply gentle sustained pressure in the muscle's longitudinal direction.	NR	The myofascial release technique was performed in the supine position for the rectus femoris muscle and side lying for tensor fasciae latae muscle and iliotibial band. The

						Once a tissue barrier was located, a static pressure was applied initially.		therapist used thumbs to apply gentle sustained pressure in the muscle's longitudinal direction. Once a tissue barrier was located, a static pressure was applied initially.

Abbreviation: NR, not reported

1g. TIDieR table of interventions for included trials that have blood flow restriction as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Constantinou et al.[39] 2022	Exercise	Physiotherapist	Face-to-face	Musculoskeletal laboratories of the European University Cyprus, Nicosia, Cyprus	3 times a week for 4 weeks	Exercise progression was individualised with weekly repetition maximum testing. Pain with exercise was not permitted.	NR	Hip and knee strengthening exercises with a combination of hamstrings, plantar flexors, quadriceps and iliotibial band stretching.

	Blood flow restriction	Physiotherapist	Face-to-face	Musculoskeletal laboratories of the European University Cyprus, Nicosia, Cyprus	3 times a week for 4 weeks	Participants limb occlusion pressure for blood flow restriction training was estimated at the beginning of each session, for all exercise positions	NR	Mechanical resistance was used at a load of 30% of one repetition maximum with a limb occlusion pressure of 70%
Giles et al.[40] 2017	Exercise	Physiotherapist	Face-to-face	NR	3 times per week over 8 weeks	If pain was reported to be greater than 2/10 on the VAS the load was reduced by 20%	Participants recorded each of the scheduled sessions that they attended	5 minutes of 'light' intensity exercise bike to warm up, leg press between 0° and 60° knee flexion and leg extension from 90° to 45° knee flexion
	Blood flow restriction	Physiotherapist	Face-to-face	NR	3 times per week over 8 weeks	Cuff pressure was increased until the pedal pulse could no longer be	Participants recorded each of the scheduled sessions that they attended	The cuff was placed on the proximal thigh and inflated to the prescribed pressure in the resting position of the exercise to be

						identified (maximum 250 mm Hg, velocity 92 cm/s), then slowly released		performed (leg press or leg extension). The exercises were performed at approximately 30% of 1RM with the blood low restriction cuff inflated.

Abbreviation: NR, not reported; *VAS,* visual analogue scale; *RM,* repetition maximum

1h. TIDieR table of interventions for included trials that have EMG biofeedback as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Qi et al.[41] 2007	Exercise	Physiotherapist	Home sessions	Patient's home	Daily for 8 weeks	The exercises were performed within the pain-free range	NR	Warm-up, flexibility and stretching exercise, balance and proprioceptive training, plyometric and agility training
	EMG biofeedback	Physiotherapist	Home sessions	Patient's home	Daily for 8 weeks	NR	NR	Electrodes were places along the fiber directions of VMO and VL. The instruction gave to participants was to aim at achieving

								selective increase of VMO activity during the exercises, while maintaining VL constant
Dursun et al.[42] 2001	Exercise	Physical therapist	Face-to-face	A physical medicine and rehabilitation department in a research hospital of a university referral center	5 days a week for the first 4 weeks and 3 days a week thereafter	NR	NR	Strengthening exercises for quadriceps and vastus medialis obliquus Flexibility training; Proprioception training Endurance training by bicycling
	EMG biofeedback	Physical therapist	Face-to-face	A physical medicine and rehabilitation department in a research hospital of a university referral center	3 days a week for 4 weeks	NR	NR	Electrodes were places in the VM and VL. Patients were instructed to contract the VM above the 80% of muscle strength threshold level and to maintain the audible signa l for 10 seconds while attempting to decrease the activity of the VL

								by remaining below its threshold level

Abbreviation: NR, not reported; *EMG,* electromyographic; *VMO,* vastus medialis obliquus; *VL,* vastus lateralis; *VM,* vastus medialis

1i. TIDieR table of interventions for included trial that have internal and external attentional focus as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Aghakeshizadeh et al.[43] 2021	Exercise	Physical therapist	Face-to-face	NR	3 times a week for 6 weeks	The exercises were performed painlessly	NR	Exercise program to increase the strength of the hip and knee muscles and to improve the motor control of the lower limbs
	Internal focus External focus	Physical therapist	Face-to-face	NR	3 times a week for 6 weeks	The patients were informed about the compensatory and incorrect movement	NR	In the internal focus group, subjects were taught to "prevent the hip to adduction move", "to avoid the hip to inwardly or internally rotate" or "to keep the trunk in the straight direction" In the external focus group, the researcher provided the patients with feedback, during

								the exercise, using simultaneously her/his hand and theraband to correct the wrong movement pattern; so that the researcher placed her/his hand on the subject body or pelvis while performing the movement, and informed the patient about the compensatory and incorrect movement

Abbreviation: NR, not reported

1j. TIDieR table of interventions for included trial that have mindfulness as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Bagheri et al.[44] 2021	Exercise	Researcher and a physiotherapist	Face-to-face	University laboratory	3 sessions per week over 18 weeks	If participants did all the exercises without (1) aggravating their knee	NR	Quadriceps and lateral retinaculum, hamstrings, soleus, gastrocnemius, and iliotibial band stretches; straight leg raise in supine; side

					pain, (2) excessive fatigue, or (3) local muscle pain 48 hours after the training session, the training load was increased		plank, prone plank, back plank; step exercise on a 20-cm step; one leg jump from a 20 –cm step; single leg stance on unstable platform
Mindfulness	Trained sport psychologist	Face-to-face and home sessions	University laboratory and patient's home	Daily over 8 weeks and 2 supervised sessions	When a participant had difficulty learning any skill, the sport psychologist spent more time with that person at the end of the session as needed	NR	The mindfulness-exercise group received instruction on mindfulness meditation practices, such as breathing meditation, body scan meditation, gentle yoga, sitting meditation, and walking meditation

Abbreviation: NR, not reported

1k. TIDieR table of interventions for included trial that have foot orthoses as adjunct treatment

Trial Year, author	Intervention type	Provider	How	Where	When and how much	Tailoring	How well	What
Eng et al.[45] 1993	Exercise	NR	Face-to-face and home sessions	Clinic and patient's home	Twice a day for 8 weeks	NR	NR	Exercise program of isometric quadriceps femoris muscle contractions and straight leg raising in a supine position and quadriceps femoris and hamstrings muscle stretching exercises
	Foot orthoses	Physical therapist	Face-to-face and home sessions	Clinic and patient's home	Daily over 8 weeks	NR	NR	Soft orthotic constructed from a flat Spenco (Spenco Sports Medicine Products, Toronto, Ontario, Canada M4W 319) insole and posted medially with rubber wedges in the hindfoot and forefoot to position the subtalar joint toward a neutral position

Abbreviation: NR, not reported

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