

Additional file 2. Excluded studies after full-text screening with reasons (n=206).

Abrahams S, Gulliford D, Korkia P, Prince J. The Influence of Leg Positioning in Exercise Programmes for Patellofemoral Joint Pain. *Journal of Orthopaedic Medicine*. 2003 Jan 1;25(3):107–13.

Reason for exclusion: *No balance measure or intervention*

Aghakeshizadeh F, Letafatkar A, Thomas AC. Internal and external focus show similar effect on the gait kinematics in patients with patellofemoral pain: A randomised controlled trial. *Gait Posture*. 2021 Feb;84:155–61.

Reason for exclusion: *No balance measure or intervention*

Ahmadi M, Yalfani A, Gandomi F, Rashid K. The Effect of Twelve Week Neurofeedback Training on Perceptual Pain Intensity, Fear of Pain, Pelvic Drop, and Dynamic Knee Valgus Index in Men with Patellofemoral Pain Syndrome: A Randomized Double-Blind Clinical Trial. *Sadra Medical Journal*. 2020 Mar 20;8(2):151–64.

Reason for exclusion: *non-English paper*

Albornoz-Cabello M, Barrios-Quinta CJ, Barrios-Quinta AM, Escobio-Prieto I, Cardero-Durán M de LA, Espejo-Antunez L. Effectiveness of Tele-Prescription of Therapeutic Physical Exercise in Patellofemoral Pain Syndrome during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2021 Jan 25;18(3):1048.

Reason for exclusion: *No balance measure or intervention*

Albornoz-Cabello M, Ibáñez-Vera AJ, Aguilar-Ferrándiz ME, Espejo-Antúnez L. Monopolar dielectric diathermy by emission of radiofrequency in Patellofemoral pain. A single-blind-randomized clinical trial. *Electromagn Biol Med*. 2020 Oct 1;39(4):282–9.

Reason for exclusion: *No balance measure or intervention*

Almeida GPL, Rodrigues HL das N, Coelho BAL, Rodrigues CAS, Lima PO de P. Anteromedial versus posterolateral hip musculature strengthening with dose-controlled in women with patellofemoral pain: A randomized controlled trial. *Phys Ther Sport*. 2021 May;49:149–56.

Reason for exclusion: *No balance measure or intervention*

Alonazi A, Hasan S, Anwer S, et al. Efficacy of Electromyographic-Biofeedback Supplementation Training with Patellar Taping on Quadriceps Strengthening in Patellofemoral Pain Syndrome among Young Adult Male Athletes. *Int J Environ Res Public Health*. 2021;18(9):4514.

Reason for exclusion: *No balance measure or intervention*

Alshaharani MS, Lohman EB, Bahjri K, Harp T, Alameri M, Jaber H, et al. Comparison of Protonics™ Knee Brace With Sport Cord on Knee Pain and Function in Patients With Patellofemoral Pain Syndrome: A Randomized Controlled Trial. *J Sport Rehabil*. 2020 Jul 1;29(5):547–54.

Reason for exclusion: *No balance measure or intervention*

Araújo CGA, de Souza Guerino Macedo C, Ferreira D, Shigaki L, da Silva RA. McConnell's patellar taping does not alter knee and hip muscle activation differences during proprioceptive exercises: A randomized placebo-controlled trial in women with

patellofemoral pain syndrome. J Electromyogr Kinesiol. 2016 Dec;31:72–80.

Reason for exclusion: No balance measure or intervention

Arendt E. Hip-strengthening exercises before functional exercises reduced pain in women with patellofemoral pain syndrome. J Bone Joint Surg Am. 2012 May 16;94(10):940.

Reason for exclusion: No balance measure or intervention

Arhos EK, Lang CE, Steger-May K, Van Dillen LR, Yemm B, Salsich GB. Task-specific movement training improves kinematics and pain during the Y-balance test and hip muscle strength in females with patellofemoral pain. J ISAKOS. 2021 Sep;6(5):277–82.

Reason for exclusion: Design

Arif FSHSMA. Effects of strengthening of hip abductors and lateral rotators for improving pain & functional limitation in patients with patellofemoral dysfunction -. Rawal Medical Journal. 2020;45(1):236–9.

Reason for exclusion: Both groups did the same interventions

Arrebola LS, Teixeira de Carvalho R, Lam Wun PY, Rizzi de Oliveira P, Firmo Dos Santos J, Coutinho de Oliveira VG, et al. Investigation of different application techniques for Kinesio Taping® with an accompanying exercise protocol for improvement of pain and functionality in patients with patellofemoral pain syndrome: A pilot study. J Bodyw Mov Ther. 2020 Jan;24(1):47–55.

Reason for exclusion: No balance measure or intervention

Ashraf MJ, Ghasemi G, Fallah AR. The effect of combined training (hip abductor and external rotators strengthening + balance) on pain and performance in the patients with patellofemoral pain syndrome. 2017 Jan 1;22:82–92.

Reason for exclusion: Non-English paper

Asif M, Sajjad Y, Naeem AA, et al. Comparison of Specific Hip Strengthening Exercises and Conventional Knee Exercises on Pain, Muscle Strength and Function in Sprinters with Patello-Femoral Pain Syndrome. Pakistan Journal of Medical & Health Sciences. 2022;16(05):686-686.

Reason for exclusion: No balance measure or intervention

Atkins LT, James CR, Yang HS, et al. Immediate Improvements in Patellofemoral Pain Are Associated With Sagittal Plane Movement Training to Improve Use of Gluteus Maximus Muscle During Single Limb Landing. Phys Ther. 2021;101(10):pzab165.

Reason for exclusion: Design

Avraham F, Aviv S, Ya'akobi P, Faran H, Fisher Z, Goldman Y, et al. The efficacy of treatment of different intervention programs for patellofemoral pain syndrome--a single blinded randomized clinical trial. Pilot study. ScientificWorldJournal. 2007 Aug 24;7:1256–62.

Reason for exclusion: No balance measure or intervention

Azab AR, Abdelbasset WK, Basha MA, et al. Incorporation of Pilates-based core strengthening exercises into the rehabilitation protocol for adolescents with patellofemoral pain syndrome: a randomized clinical trial. Eur Rev Med Pharmacol

Sci. 2022;26(4):1091-1100.

Reason for exclusion: No balance measure or intervention

Baellow A, Glaviano NR, Hertel J, Saliba SA. Lower Extremity Biomechanics During a Drop-Vertical Jump and Muscle Strength in Women With Patellofemoral Pain. J Athl Train. 2020 Jun 23;55(6):615–22.

Reason for exclusion: No balance measure or intervention

Bagheri S, Hosseini SH, Saki F, Nikoo MR, Yarahmadi A. The effects of water-based posterolateral hip muscle strengthening on pain intensity and function in females with patellofemoral pain syndrome. Scientific Journal of Kurdistan University of Medical Sciences. 2017 Jan 10;21(6):99–109.

Reason for exclusion: Non-English paper

Bagheri S, Naderi A, Mirali S, Calmeiro L, Brewer BW. Adding Mindfulness Practice to Exercise Therapy for Female Recreational Runners With Patellofemoral Pain: A Randomized Controlled Trial. J Athl Train. 2021 Aug 1;56(8):902–11.

Reason for exclusion: No balance measure or intervention

Bagheri S, Shojaedin SS, Jamshidi AA, Letafatkar A, Nikoo MR. Electromyographic responses of vastus muscles to dynamic postural perturbations in athletes with patellofemoral pain syndrome. 2016 Jan 1;21:49–60.

Reason for exclusion: Non-English paper

Bakhtiary AH, Fatemi E. Open versus closed kinetic chain exercises for patellar chondromalacia. Br J Sports Med. 2008 Feb;42(2):99–102; discussion 102.

Reason for exclusion: No balance measure or intervention

Balci P, Tunay V, Baltaci G, Atay A. The effects of two different closed kinetic chain exercises on muscle strength and proprioception in patients with patellofemoral pain syndrome. Acta orthopaedica et traumatologica turcica. 2004 Jan 1;43:419–25.

Reason for exclusion: No balance measure or intervention

Baldon R de M, Serrão FV, Scattone Silva R, Piva SR. Effects of functional stabilization training on pain, function, and lower extremity biomechanics in women with patellofemoral pain: a randomized clinical trial. J Orthop Sports Phys Ther. 2014 Apr;44(4):240–51, A1–8.

Reason for exclusion: Both groups did the same interventions

Banan SM, Oliyaie GR, Mir M, Talebi GA. The Effectiveness of Exercise Therapy Based on Sahrman Approach in Patients with Patella-Femoral Pain Syndrome. Journal of Babol University of Medical Sciences. 2016 Aug 10;18(8):7–13.

Reason for exclusion: No balance measure or intervention

Basbug P, Kilic RT, Atay AO, Bayrakçı Tunay V. The effects of progressive neuromuscular exercise program and taping on muscle strength and pain in patellofemoral pain. A randomized controlled blind study. Somatosens Mot Res. 2022;39(1):39–45.

Reason for exclusion: No balance measure or intervention

Begum R, Tassadaq N, Ahmad S, Qazi WA, Javed S, Murad S. Effects of McConnell taping

combined with strengthening exercises of vastus medialis oblique in females with patellofemoral pain syndrome. J Pak Med Assoc. 2020 Apr;70(4):728–30.

Reason for exclusion: No balance measure or intervention

Bily W, Trimmel L, Mödlin M, Kaider A, Kern H. Training program and additional electric muscle stimulation for patellofemoral pain syndrome: a pilot study. Arch Phys Med Rehabil. 2008 Jul;89(7):1230–6.

Reason for exclusion: Both groups did the same interventions

Bolgia LA, Earl-Boehm J, Emery C, Hamstra-Wright K, Ferber R. Pain, function, and strength outcomes for males and females with patellofemoral pain who participate in either a hip/core- or knee-based rehabilitation program. Int J Sports Phys Ther. 2016 Dec;11(6):926–35.

Reason for exclusion: Design

Bolgia LA, Malone TR, Umberger BR, Uhl TL. Comparison of hip and knee strength and neuromuscular activity in subjects with and without patellofemoral pain syndrome. Int J Sports Phys Ther. 2011 Dec;6(4):285–96.

Reason for exclusion: No balance measure or intervention

Boling MC, Bolgia LA, Mattacola CG, Uhl TL, Hosey RG. Outcomes of a weight-bearing rehabilitation program for patients diagnosed with patellofemoral pain syndrome. Arch Phys Med Rehabil. 2006 Nov;87(11):1428–35.

Reason for exclusion: Design

Botta AFB, Waiteman MC, Perez VO, et al. Trunk muscle endurance in individuals with and without patellofemoral pain: Sex differences and correlations with performance tests. Phys Ther Sport. 2021;52:248-255.

Reason for exclusion: No balance measure or intervention

Celik D, Argut SK, Türker N, Kilicoglu OI. The effectiveness of superimposed neuromuscular electrical stimulation combined with strengthening exercises on patellofemoral pain: A randomized controlled pilot trial. J Back Musculoskeletal Rehabil. 2020;33(4):693–9.

Reason for exclusion: No balance measure or intervention

Citaker S, Kaya D, Yuksel I, Yosmaoglu B, Nyland J, Atay OA, et al. Static Balance in Patients With Patellofemoral Pain Syndrome. Sports Health. 2011 Nov;3(6):524–7.

Reason for exclusion: Design

Claudon B, Poussel M, Billon-Grumillier C, Beyaert C, Paysant J. Knee kinetic pattern during gait and anterior knee pain before and after rehabilitation in patients with patellofemoral pain syndrome. Gait Posture. 2012 May;36(1):139–43.

Reason for exclusion: No balance measure or intervention

Collins N, Crossley K, Beller E, Darnell R, McPoil T, Vicenzino B. Foot orthoses and physiotherapy in the treatment of patellofemoral pain syndrome: randomised clinical trial. BMJ. 2008 Oct 24;337:a1735.

Reason for exclusion: No balance measure or intervention

Constantinou A, Mamais I, Papathanasiou G, Lamnisis D, Stasinopoulos D. Comparing hip and knee focused exercises versus hip and knee focused exercises with the use of blood flow restriction training in adults with patellofemoral pain. *Eur J Phys Rehabil Med.* 2022;58(2):225-235.

Reason for exclusion: *No balance measure or intervention*

Corum M, Basoglu C, Yakal S, Sahinkaya T, Aksoy C. Effects of whole body vibration training on isokinetic muscular performance, pain, function, and quality of life in female patients with patellofemoral pain: a randomized controlled trial. *J Musculoskelet Neuronal Interact.* 2018 Dec 1;18(4):473–84.

Reason for exclusion: *No balance measure or intervention*

Cowan SM, Bennell KL, Crossley KM, Hodges PW, McConnell J. Physical therapy alters recruitment of the vasti in patellofemoral pain syndrome. *Med Sci Sports Exerc.* 2002a Dec;34(12):1879–85.

Reason for exclusion: *No balance measure or intervention*

Cowan SM, Bennell KL, Hodges PW, Crossley KM, McConnell J. Simultaneous feedforward recruitment of the vasti in untrained postural tasks can be restored by physical therapy. *J Orthop Res.* 2003 May;21(3):553–8.

Reason for exclusion: *No balance measure or intervention*

Cowan SM, Hodges PW, Bennell KL, Crossley KM. Altered vastii recruitment when people with patellofemoral pain syndrome complete a postural task. *Arch Phys Med Rehabil.* 2002b Jul;83(7):989–95.

Reason for exclusion: *No balance measure or intervention*

Crossley K, Bennell K, Green S, Cowan S, McConnell J. Physical therapy for patellofemoral pain: a randomized, double-blinded, placebo-controlled trial. *Am J Sports Med.* 2002 Dec;30(6):857–65.

Reason for exclusion: *No balance measure or intervention*

Crossley KM, Cowan SM, McConnell J, Bennell KL. Physical therapy improves knee flexion during stair ambulation in patellofemoral pain. *Med Sci Sports Exerc.* 2005 Feb;37(2):176–83.

Reason for exclusion: *No balance measure or intervention*

Çubukçu D, Sarsan A, Topuz O, Ardic F. Efficacy of open versus closed kinetic chain exercises for patients with patellofemoral pain syndrome. *Journal of Rheumatology and Medical Rehabilitation.* 2004 Mar 1;15:16–25.

Reason for exclusion: *Non-English paper*

Demirci S, Bayrakci Tunay. Comparison of effect of mobilization with movement and taping on balance and function in patellofemoral pain syndrome. *Fizyoterapi rehabilitasyon.* 2015;26(2).

Reason for exclusion: *Design*

Denton J, Willson JD, Ballantyne BT, Davis IS. The addition of the Protonics brace system to a rehabilitation protocol to address patellofemoral joint syndrome. J Orthop Sports Phys Ther. 2005 Apr;35(4):210–9.

Reason for exclusion: No balance measure or intervention

Dolak KL, Silkman C, Medina McKeon J, Hosey RG, Lattermann C, Uhl TL. Hip strengthening prior to functional exercises reduces pain sooner than quadriceps strengthening in females with patellofemoral pain syndrome: a randomized clinical trial. J Orthop Sports Phys Ther. 2011 Aug;41(8):560–70.

Reason for exclusion: Both groups did the same interventions

Drew BT, Conaghan PG, Smith TO, Selfe J, Redmond AC. The effect of targeted treatment on people with patellofemoral pain: a pragmatic, randomised controlled feasibility study. BMC Musculoskeletal Disorders. 2017 Aug 4;18(1):338.

Reason for exclusion: No balance measure or intervention

Dursun N, Dursun E, Kiliç Z. Electromyographic biofeedback-controlled exercise versus conservative care for patellofemoral pain syndrome. Arch Phys Med Rehabil. 2001 Dec;82(12):1692–5.

Reason for exclusion: Both groups did the same interventions

Eburne J, Bannister G. The McConnell regimen versus isometric quadriceps exercises in the management of anterior knee pain. A randomised prospective controlled trial. The Knee. 1996 Aug 1;3(3):151–3.

Reason for exclusion: No balance measure or intervention

EL Harrison, MS Sheppard, AM McQuarrie. A randomised controlled trial of physical therapy treatment programs in patellofemoral pain syndrome. Physiother Canada. 1999;93–100.

Reason for exclusion: No balance measure or intervention

Eng JJ, Pierrynowski MR. Evaluation of soft foot orthotics in the treatment of patellofemoral pain syndrome. Phys Ther. 1993 Feb;73(2):62–8; discussion 68-70.

Reason for exclusion: No balance measure or intervention

Erdoganoglu Y, Pepe M, Kaya D, Tagrikulu B, Aksahin E, Aktekin CN. Lower extremity alignment due to patellofemoral syndrome and dynamic postural balance. J Orthop Surg (Hong Kong). 2020 Apr;28(1):2309499019900819.

Reason for exclusion: Design

Erel S, Özkan H. A comparison of the effects of closed and open kinetic chain exercises on functional status in patellofemoral pain syndrome. Fizyoterapi Rehabilitasyon. 2011 Dec 1;22:217–23.

Reason for exclusion: Non-English paper

Esculier J-F, Bouyer LJ, Dubois B, Fremont P, Moore L, McFadyen B, et al. Is combining gait retraining or an exercise programme with education better than education alone in treating runners with patellofemoral pain? A randomised clinical trial. Br J Sports Med. 2018 May;52(10):659–66.

Reason for exclusion: No balance measure or intervention

Esculier J-F, Bouyer LJ, Roy J-S. The Effects of a Multimodal Rehabilitation Program on Symptoms and Ground-Reaction Forces in Runners With Patellofemoral Pain Syndrome. *J Sport Rehabil*. 2016 Feb;25(1):23–30.

Reason for exclusion: *Design*

Eslamian F, Aminabad F, Toopchizadeh V, Kharrazi B. The Associations of Vitamin D Deficiency with Knee Pain and Biomechanical Abnormalities in Young Iranian Patients with Patellofemoral Pain Syndrome: A Case-Control Study. *Iranian Red Crescent Medical Journal*. 2018 Aug 8;In Press.

Reason for exclusion: *No balance measure or intervention*

Espí-López GV, Serra-Añó P, Vicent-Ferrando J, Sánchez-Moreno-Giner M, Arias-Buría JL, Cleland J, et al. Effectiveness of Inclusion of Dry Needling in a Multimodal Therapy Program for Patellofemoral Pain: A Randomized Parallel-Group Trial. *J Orthop Sports Phys Ther*. 2017 Jun;47(6):392–401.

Reason for exclusion: *No balance measure or intervention*

Etemadi M, Asadi Z, Hedayati R, Salavati M, Aminianfar A. Effects of the surface instability degrees on dynamic postural stability in anterior knee pain patients and healthy subjects. *Koomesh*. 2013 Jan 1;15:67–77.

Reason for exclusion: *Non-English paper*

Evcik D. Home-Based Exercise and Patellar Bracing in the Treatment of Patellofemoral Pain Syndrome. *Türkiye Fiziksel Tıp ve Rehabilitasyon Dergisi*. 2010 Oct 4;56:100–4.

Reason for exclusion: *No balance measure or intervention*

Fukuda TY, Rossetto FM, Magalhães E, Bryk FF, Lucareli PRG, de Almeida Aparecida Carvalho N. Short-term effects of hip abductors and lateral rotators strengthening in females with patellofemoral pain syndrome: a randomized controlled clinical trial. *J Orthop Sports Phys Ther*. 2010 Nov;40(11):736–42.

Reason for exclusion: *No balance measure or intervention*

Gavish L, Spitzer E, Friedman I, Lowe J, Folk N, Zerbiv Y, et al. Photobio modulation in addition to physiotherapy for overuse anterior knee pain in combat soldiers: a double-blind, randomized, sham-controlled trial. *Lasers in Medical Science*. 2020;35(1):284.

Reason for exclusion: *Design*

Gerrard B. The Patello-Femoral Pain Syndrome: A Clinical Trial of the McConnell Programme. *Australian Journal of Physiotherapy*. 1989 Jan 1;35(2):71–80.

Reason for exclusion: *No balance measure or intervention*

Ghourbanpour A, Talebi GA, Hosseinzadeh S, Janmohammadi N, Taghipour M. Effects of patellar taping on knee pain, functional disability, and patellar alignments in patients with patellofemoral pain syndrome: A randomized clinical trial. *J Bodyw Mov Ther*. 2018 Apr;22(2):493–7.

Reason for exclusion: *No balance measure or intervention*

Glaviano NR, Marshall AN, Mangum LC, Hart JM, Hertel J, Russell S, et al. Impairment-Based Rehabilitation With Patterned Electrical Neuromuscular Stimulation and Lower Extremity Function in Individuals With Patellofemoral Pain: A Preliminary Study. *J*

Athl Train. 2019 Mar;54(3):255–69.

Reason for exclusion: Both groups did the same interventions

Golpayegani M, Emami S. The effect of proprioceptive neuromuscular facilities (PNF) stretching exercise on patellofemoral pain syndrome (PFPS). Scientific Journal of Kurdistan University of Medical Sciences. 2017 Apr 10;22(1):36–42.

Reason for exclusion: Non-English paper

Greaves H, Comfort P, Liu A, Lee Herrington, Richard Jones. How effective is an evidence-based exercise intervention in individuals with patellofemoral pain? Physical Therapy in Sport. 2021 Sep 1;51:92–101.

Reason for exclusion: Design

Günay E, Sarıkaya S, Özdolap Ş, Büyükuysal Ç. Effectiveness of the kinesiotaping in the patellofemoral pain syndrome. Turk J Phys Med Rehabil. 2017 Nov 27;63(4):299–306.

Reason for exclusion: No balance measure or intervention

Güney H, Yüksel İ, Kaya D, Doral MN. Effects of Different Isokinetic Training Programs on Hamstring/Quadriceps Ratio and Proprioception in Patients with Patellofemoral Pain. Orthop J Sports Med. 2014 Dec 1;2(3 Suppl):2325967114S00147.

Reason for exclusion: Design

Hafez A, Zakaria A, Buragadda S. Eccentric versus Concentric Contraction of Quadriceps Muscles in Treatment of Chondromalacia Patellae. World Journal of Medical Sciences. 2012 Jan 1;7:197–203, 2012.

Reason for exclusion: No balance measure or intervention

Halabchi F, Mazaheri R, Mansournia MA, Hamed Z. Additional Effects of an Individualized Risk Factor-Based Approach on Pain and the Function of Patients With Patellofemoral Pain Syndrome: A Randomized Controlled Trial. Clin J Sport Med. 2015 Nov;25(6):478–86.

Reason for exclusion: No balance measure or intervention

Hamstra-Wright KL, Aydemir B, Earl-Boehm J, Bolgla L, Emery C, Ferber R. Lasting Improvement of Patient-Reported Outcomes 6 Months After Patellofemoral Pain Rehabilitation. J Sport Rehabil. 2017a Jul;26(4):223–33.

Reason for exclusion: Design

Hamstra-Wright KL, Earl-Boehm J, Bolgla L, Emery C, Ferber R. Individuals With Patellofemoral Pain Have Less Hip Flexibility Than Controls Regardless of Treatment Outcome. Clin J Sport Med. 2017b Mar;27(2):97–103.

Reason for exclusion: Design

Hart L. Supervised exercise versus usual care for patellofemoral pain syndrome. Clin J Sport Med. 2010 Mar;20(2):133.

Reason for exclusion: Design

Heydari Armaki R, Abbasnia K, Motealleh A. Comparison of Trunk Flexion Proprioception Between Healthy Athletes and Athletes With Patellofemoral Pain. J Sport Rehabil.

2020;30(3):430-436.

Reason for exclusion: *No balance measure or intervention*

Holden S, Rathleff MS, Thorborg K, Holmich P, Graven-Nielsen T. Mechanistic pain profiling in young adolescents with patellofemoral pain before and after treatment: a prospective cohort study. *Pain*. 2020 May;161(5):1065–71.

Reason for exclusion: *No balance measure or intervention*

Hott A, Brox JI, Pripp AH, Juel NG, Liavaag S. Patellofemoral pain: One year results of a randomized trial comparing hip exercise, knee exercise, or free activity. *Scand J Med Sci Sports*. 2020 Apr;30(4):741–53.

Reason for exclusion: *No balance measure or intervention*

Hott A, Brox JI, Pripp AH, Juel NG, Paulsen G, Liavaag S. Effectiveness of Isolated Hip Exercise, Knee Exercise, or Free Physical Activity for Patellofemoral Pain: A Randomized Controlled Trial. *Am J Sports Med*. 2019 May;47(6):1312–22.

Reason for exclusion: *No balance measure or intervention*

Ismail MM, Gamaleldein MH, Hassa KA. Closed kinetic chain exercises with or without additional hip strengthening exercises in management of patellofemoral pain syndrome: a randomized controlled trial. *Eur J Phys Rehabil Med*. 2013 Oct;49(5):687–98.

Reason for exclusion: *No balance measure or intervention*

Jellad A, Kalai A, Guedria M, Jguirim M, Elmhamdi S, Salah S, et al. Combined Hip Abductor and External Rotator Strengthening and Hip Internal Rotator Stretching Improves Pain and Function in Patients With Patellofemoral Pain Syndrome: A Randomized Controlled Trial With Crossover Design. *Orthop J Sports Med*. 2021 Apr;9(4):2325967121989729.

Reason for exclusion: *No balance measure or intervention*

Karakuş D, Dulgeroglu D, Unsal S, Uçan H, Özel S. Patellofemoral Pain Syndrome: Results of a Home Exercise Program Versus Isokinetic Exercise Program on Functional Capacity. *Türkiye Fiziksel Tip ve Rehabilitasyon Dergisi*. 2014 Jul 6;60:63–7.

Reason for exclusion: *Non-English paper*

Karamiani F, Mostamand J, Rahimi A, Nasirian M. The Effect of Gluteus Medius Dry Needling on Pain and Physical Function of Non-athlete women with Unilateral Patellofemoral Pain Syndrome: A Double-Blind Randomized Clinical Trial. *J Bodyw Mov Ther*. 2022;30:23-29.

Reason for exclusion: *No balance measure or intervention*

Kaya D, Yuksel I, Callaghan M, Guney H, Atay O, Citaker S, et al. High Voltage Pulsed Galvanic Stimulation adjunct to rehabilitation program for Patellofemoral Pain Syndrome: A prospective randomized controlled trial. *Turkish Journal of Physiotherapy and Rehabilitation*. 2013 Apr 1;24:1–8.

Reason for exclusion: *Both groups did the same interventions*

KE Taylor, JW Brantingham. An investigation into the effect of exercise combined with patella mobilization/manipulation in the treatment of patellofemoral pain syndrome: a

randomized, assessor-blinded, controlled clinical pilot trial. *European Journal of Chiropractic*. 2003;5(1):5–17.

Reason for exclusion: *No balance measure or intervention*

Keays SL, Mason M, Newcombe PA. Individualized physiotherapy in the treatment of patellofemoral pain. *Physiother Res Int*. 2015 Mar;20(1):22–36.

Reason for exclusion: *Design*

Keays SL, Mason M, Newcombe PA. Three-Year Outcome After a 1-Month Physiotherapy Program of Local and Individualized Global Treatment for Patellofemoral Pain Followed by Self-Management. *Clin J Sport Med*. 2016 May;26(3):190–8.

Reason for exclusion: *No balance measure or intervention*

Kedroff L, Li Ko Lun A, Shimoni D, Bearne LM. Cognitive behavioural therapy-informed physiotherapy for patellofemoral pain: A feasibility study. *Musculoskeletal Care*. 2019 Dec;17(4):382–9.

Reason for exclusion: *No balance measure or intervention*

Keshmarzi SK, Gheitasi M, Miri H. The effects of six weeks of Core stabilization exercise on pain, Functional disability and Isometric strength of the trunk and lower extremities Muscle in women with patellofemoral pain syndrome. *Advances in Nursing & Midwifery*. 2018 Nov 3;27(1):8–16.

Reason for exclusion: *Non-English paper*

Khayambashi K, Mohammadkhani Z, Ghaznavi K, Lyle MA, Powers CM. The effects of isolated hip abductor and external rotator muscle strengthening on pain, health status, and hip strength in females with patellofemoral pain: a randomized controlled trial. *J Orthop Sports Phys Ther*. 2012 Jan;42(1):22–9.

Reason for exclusion: *No balance measure or intervention*

Kim HJ, Cho J, Lee S. Talonavicular joint mobilization and foot core strengthening in patellofemoral pain syndrome: a single-blind, three-armed randomized controlled trial. *BMC Musculoskelet Disord*. 2022;23(1):150.

Reason for exclusion: *No balance measure or intervention*

Kisacik P, Karaduman A, Tunay VB, Bek N, Atay ÖA. The effects of short foot exercise on pain, knee and foot biomechanics in patients with patellofemoral pain. *Annals of the Rheumatic Diseases*. 2018 Jun 1;77(Suppl 2):1851–2.

Reason for exclusion: *Design*

Kisacik P, Tunay VB, Bek N, Atay ÖA, Selfe J, Karaduman AA. Short foot exercises have additional effects on knee pain, foot biomechanics, and lower extremity muscle strength in patients with patellofemoral pain. *J Back Musculoskelet Rehabil*. 2021 May 14;

Reason for exclusion: *No balance measure or intervention*

Kölle T, Alt W, Wagner D. Effects of a 12-week home exercise therapy program on pain and neuromuscular activity in patients with patellofemoral pain syndrome. *Arch Orthop Trauma Surg*. 2020a Dec;140(12):1985–92.

Reason for exclusion: *Design*

- Kölle T, Alt W, Wagner D. Immediate effects of an elastic patellar brace on pain, neuromuscular activity and knee kinematics in subjects with patellofemoral pain. *Arch Orthop Trauma Surg.* 2020b Jul;140(7):905–12.
Reason for exclusion: *No balance measure or intervention*
- Korakakis V, Whiteley R. Blood flow restriction-induced pain reduction in patients with anterior knee pain. A pilot RCT. *Journal of Science and Medicine in Sport.* 2017 Nov 1;20:80.
Reason for exclusion: *Design*
- Korakakis V, Whiteley R, Epameinontidis K. Blood flow restriction to lower body induces analgesia in patients with anterior knee pain. *Manual Therapy.* 2016 Sep 1;25:e140.
Reason for exclusion: *Design*
- Korakakis V, Whiteley R, Epameinontidis K. Blood Flow Restriction induces hypoalgesia in recreationally active adult male anterior knee pain patients allowing therapeutic exercise loading. *Phys Ther Sport.* 2018 Jul;32:235–43.
Reason for exclusion: *No balance measure or intervention*
- Kowall MG, Kolk G, Nuber GW, Cassisi JE, Stern SH. Patellar taping in the treatment of patellofemoral pain. A prospective randomized study. *Am J Sports Med.* 1996 Feb;24(1):61–6.
Reason for exclusion: *No balance measure or intervention*
- Kuru T, Yalman A, Dereli EE. Comparison of efficiency of Kinesio® taping and electrical stimulation in patients with patellofemoral pain syndrome. *Acta Orthop Traumatol Turc.* 2012;46(5):385–92.
Reason for exclusion: *No balance measure or intervention*
- Lankhorst NE, van Middelkoop M, van Trier YDM, van Linschoten R, Koes BW, Verhaar JAN, et al. Can we predict which patients with patellofemoral pain are more likely to benefit from exercise therapy? A secondary exploratory analysis of a randomized controlled trial. *J Orthop Sports Phys Ther.* 2015 Mar;45(3):183–9.
Reason for exclusion: *Design*
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Reason for exclusion: *No balance measure or intervention*
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