

EVIDENCE-BASED QUICKNOTES

Patellofemoral pain - update

Does exercise therapy reduce pain and increase function in individuals with patellofemoral pain (PFP)?

To answer this question, we performed a comprehensive search of the PubMed database (March 2012) for randomized, controlled trials that addressed this specific research question and were published since 2008.

The best available evidence from our search consisted of 6 randomized trials (1-6), 3 with control groups (3-5). Akbas et al evaluated the effect of quadriceps and hip exercise with or without kinesio taping among 31 women with PFP and found significant improvement in pain and function after 6 wks but no additional effect of taping (1). In a 2 wk study, Mason et al compared quadriceps strengthening, stretching, or infrapatellar taping among 60 knees with PFP, evaluating the treatments in isolation and in combination (3). They found taping to be the least effective, but recommended combined treatment (3).

Dolak et al compared 4 wks of isolated hip or quadriceps exercise among 33 women with PFP (2)

and found that self-reported pain decreased only with hip exercise (2). Subjects then completed 4 wks of functional exercises and showed significant improvements in outcomes regardless of the type of prior exercise (2). Similarly, Fukuda et al compared knee exercise to knee plus hip exercise among 70 sedentary women with PFP and found significant improvements in pain and function with both treatments (4). However, the addition of hip exercises met minimum clinical improvements in pain and function (4). In a small study of 14 adults with PFP, Nakagawa et al also evaluated the effect of adding hip strengthening to quadriceps exercise and found that pain improved after 6 wks only in the group also doing hip exercises (6). In a study by van Linschoten et al, the effect of 3 mos of supervised and home exercise was compared to no treatment among 131 patients with PFP; significant improvement in pain and function, but not in patient's self-reported recovery, was shown with exercise only (5).

Based on this review, it can be concluded that exercise therapy, particularly a combination of quadriceps and hip exercises, improves pain and function among patients with PFP.

Check with the provider of this newsletter to learn more about exercises appropriate for this condition.

1. Akbaş E, Atay AO, Yüksel I. The effects of additional kinesio taping over exercise in the treatment of patellofemoral pain syndrome. *Acta Orthop Traumatol Turc.* 2011 Sep;45(5):335-41. doi: 10.3944/AOTT.2011.2403. Erratum in: *Acta Orthop Traumatol Turc.* 2011;45(6):471. PubMed PMID: 22032998.
2. 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. Epub 2011 Jun 7. Erratum in: *J Orthop Sports Phys Ther.* 2011 Sep;41(9):700. PubMed PMID: 21654093.
3. Fukuda TY, Rossetto FM, Magalhães E, Bryk FF, Lucareli PR, 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. PubMed PMID: 21041965.
4. Mason M, Keays SL, Newcombe PA. The effect of taping, quadriceps strengthening and stretching prescribed separately or combined on patellofemoral pain. *Physiother Res Int.* 2011 Jun;16(2):109-19. doi: 10.1002/pri.486. Epub 2010 Jul 14. PubMed PMID: 20632302.
5. van Linschoten R, van Middelkoop M, Berger MY, Heintjes EM, Verhaar JA, Willemsen SP, Koes BW, Bierma-Zeinstra SM. Supervised exercise therapy versus usual care for patellofemoral pain syndrome: an open label randomised controlled trial. *BMJ.* 2009 Oct 20;339:b4074. doi: 10.1136/bmj.b4074. PubMed PMID: 19843565; PubMed Central PMCID: PMC2764849.
6. Nakagawa TH, Muniz TB, Baldon Rde M, Dias Maciel C, de Menezes Reiff RB, Serrão FV. The effect of additional strengthening of hip abductor and lateral rotator muscles in patellofemoral pain syndrome: a randomized controlled pilot study. *Clin Rehabil.* 2008 Dec;22(12):1051-60. PubMed PMID: 19052244.