

Palliation of Patellofemoral Pain: A Review of Treatment Techniques

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Authors and Disclosures

Posted: 02/10/2009

Best Evidence Reference

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;337:a1735.

Abstract

This study was selected from Medscape Best Evidence, which uses the McMaster Online Rating of Evidence System. Of a possible top score of 7, this study was ranked as 6 for newsworthiness and 7 for relevance by clinicians who used this system.

Brief Summary

Patellofemoral pain syndrome is one of the most common overuse injuries. Various treatments for patellofemoral pain syndrome may be effective, including exercise, physical therapy, pharmacotherapy, bracing, and orthotics. The current review highlights a rare study that compared different treatment modalities in the management of patellofemoral pain syndrome.

Background

Patellofemoral pain syndrome is a descriptive term for a set of tendonopathies that promote anterior knee pain. Pain may be exacerbated when first standing after a prolonged sit.^[1] Physical examination is not very specific but may reveal patellofemoral malalignment and tenderness at the patellofemoral facets. A "J" sign may also be present, in which the patella tracks laterally during contraction of the quadriceps.

Patellofemoral pain syndrome is very common, particularly among runners. In a study of 2002 patients with injuries related to running, patellofemoral pain syndrome was the most common injury encountered, accounting for 19% of cases.^[2] It was nearly twice as common among women vs men. The research also demonstrated that patellofemoral pain syndrome was more common among patients under 34 years old as well as among women less than 157 cm tall. Running at a greater intensity of exercise was associated with a lower risk for patellofemoral pain syndrome. In one of the few prospective studies to evaluate the risk for patellofemoral pain syndrome, the diagnosis was made in 9% of young adults in physical education classes over a

period of 2 years.^[3] Significant factors associated with an increased risk for patellofemoral pain syndrome included:

- Shortened quadriceps muscles;
- Altered vastus medialis obliquus muscle reflex response time;
- Reduced explosive strength; and
- Hypermobility patella.

Treatment

A change to the exercise schedule, including a reduction in the frequency, duration, and distance of running, is a good first step in the treatment of patellofemoral pain syndrome.^[4] However, many patients may be reluctant to give up significant amounts of physical activity. Therefore, multiple modalities are frequently necessary in the treatment of patellofemoral pain syndrome, including exercise, physical therapy, pharmacotherapy, bracing, and orthotics.

Exercise therapy. A review of exercise therapy for patellofemoral pain syndrome revealed that 2 of 3 randomized trials demonstrated that exercise could reduce pain.^[5] Exercise therapy for patellofemoral pain syndrome focuses on strengthening the quadriceps muscles along with stretching to loosen tight structures, such as the hamstrings, the iliotibial band, and the patellar retinaculum. In the one high-quality study examined, the number of patients needed to treat with exercise to produce significant pain benefit was only 3. Only 1 low-quality study suggested greater functional improvement with exercise. There was more research comparing open kinetic chain, in which the foot is not in contact with a surface, vs closed kinetic chain (foot in contact with a surface) exercise. However, these exercise types were similar with regard to pain relief and function.

Pharmacotherapy. A similar review of pharmacotherapy for patellofemoral pain syndrome suggested that common analgesics may not be highly effective.^[6] Aspirin was not superior to placebo in one small study, although naproxen reduced pain in another trial. Glycosaminoglycan polyphosphate, delivered intramuscularly or as an intra-articular knee injection, was associated with conflicting results with regard to efficacy for pain.

Physical therapy. Physical therapy can also reduce the symptoms of patellofemoral pain syndrome. Patellar taping has been associated with rapid improvement in symptoms, regardless of the taping method applied.^[7] There are mixed results as to whether patellar taping and strengthening exercises improve pain and function compared with exercise alone.^[8,9]

Orthotics. Finally, orthotics have also been demonstrated to help relieve patellofemoral pain syndrome. In a small study of patients with patellofemoral pain and excessive foot pronation, foot orthotics improved pain and stiffness within 2 weeks.^[10] Moreover, quality-of-life measures were improved from baseline at 3 months after the initiation of foot orthotics.

A study in the Cochrane Database of Systematic Reviews reviewed the body of literature in regard to the use of orthotics for patellofemoral pain syndrome.^[11] Researchers included 5 trials with a total of 362 participants. All trials were of low methodologic quality, but the findings were generally positive. The Protonics™ (Empi, St. Paul, Minnesota) orthosis improved pain and function. This is a hinged device with adjustable struts, cuffs, and pads that supports the knee, allows mobility, and provides appropriate levels of resistance during activity. Other soft orthoses improved pain and patient satisfaction. However, the reviewers concluded that more high-quality evidence is needed before orthoses can be recommended with confidence in the management of patellofemoral pain syndrome.

Although orthotics and physical therapy may be effective in the management of patellofemoral pain syndrome, few large trials have compared these treatment approaches, either alone or in combination. The current study addresses this issue.

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