Patellofemoral pain syndrome: a critical review of the clinical trials on nonoperative therapy

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Authors' objectives
To assess the evidence from clinical trials on nonsurgical therapies for patellofemoral pain syndrome.

Searching
MEDLINE was searched from 1966 to 1995 (search terms are given), the Family Medicine Database in the Canadian College of Family Physicians Library in Ontario, reference lists from textbook articles, references from articles retrieved, writing to key authors and searching key journals.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were included.

Specific interventions included in the review
The only specific inclusion criteria was that the therapy be nonsurgical. The interventions that were found in the studies retrieved were: orthotic insoles (both flat and soft), knee braces (Genutrain and simple sleeve), non steroidal anti-inflammatory agents, intraarticular glycosaminoglycan polysulfate, intraarticular placebo injection of physiologic saline, and intramuscular glycosaminoglycan polysulfate.

Participants included in the review
The disease and participant inclusion criteria are not clearly stated, but the authors do state that patellofemoral pain syndrome has a variety of definitions and for the purposes of the review they have included a broad range of definitions from articles on patients with patellar cartilage damage. A general definition of patellofemoral pain syndrome is given in the text. No further inclusion criteria are given. 38% of patients were female, with average ages (where reported) ranging from 14.8 to 32.3 years.

Outcomes assessed in the review
'Pain' (although scales used for measuring pain are stated for only one study) in almost all studies, side-effects in some studies, 'relief of symptoms', (in one study) patellar assessments and full squatting tests and (in one study) arthroscopic evaluation of the surfaces of the cartilage.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were not combined. The results of each were reported and discussed separately.
How were differences between studies investigated?
Details of the individual studies are discussed in the text.

**Results of the review**
Five RCTs (219 participants) were included.

The results of each of the five studies are reported but not synthesised. The results for the individual studies are as follows.

Orthotic study: both orthotic and control groups had significant decreases in pain after 8 weeks and the orthotic group had significantly greater pain reduction than the control group.

Knee brace study: 80% of the non treated group had complete resolution of pain compared with 43% of the knee brace group and 74% of the group given a simple elastic sleeve. 18% of knees in the simple sleeve group and 55% in the knee brace group had discomfort or skin abrasions after wearing the devices. The mean pain score for the no-treatment group was significantly better than either of the two groups wearing elastic sleeves (p = 0.04).

Anti-inflammatory study: 55% of patients taking Diflunisal and 63% taking Naproxen had significant relief after 5 days. There was no difference between the two drugs when compared on pain scores (p>0.05).

Glycosaminoglycan polysulfate study 1 (intraarticular): At the 6 week assessment the two injection groups (glycosaminoglycan polysulfate and physiologic saline) were significantly better than the noninjection group on all three patellar assessments and full squatting tests, but this difference had disappeared by the 6 month evaluation. Both injection groups had better pain scores on one of three pain scales than the non-injection group. A full recovery was made by 63% of the conservative group, 77% of the glycosaminoglycan polysulfate group and 81% of the saline group.

Glycosaminoglycan polysulfate study 2 (intramuscular): statistically- significant improvements were seen on the surfaces of the cartilage at the 12-month arthroscopic evaluations.

**Authors' conclusions**
The use of prostheses for specific foot structural problems is promising in the short term, while the use of intramuscular glycosaminoglycan polysulfate needs confirmation for retropatellar cartilage damage. Knee braces and sleeves should be avoided, as should intraarticular glycosaminoglycan polysulfate where there is no cartilage damage. Further well-designed research is required.

**CRD commentary**
This review is systematic in its search methods and in the decision to include only RCTs. The disease itself is not clearly-defined, and so the trials that are retrieved are not only reporting on different interventions but, in some cases, on a different disease so no synthesis is possible. The narrative discussion is appropriate in that it does not attempt to pool data from the different trials.

Because of the very different primary studies, the conclusions that are given are based on information from individual studies and would only be applicable to the particular form of the disease from which the participants in the study were suffering. A systematic assessment of included trial methodology would also have been helpful.

The review highlights the lack of agreement of a definition for the condition and the paucity of RCTs in this area.

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