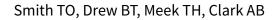


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Smith TO, Drew BT, Meek TH, Clark AB.
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Cochrane Database of Systematic Reviews 2015, Issue 12. Art. No.: CD010513.

DOI: 10.1002/14651858.CD010513.pub2.

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[Intervention Review]

Knee orthoses for treating patellofemoral pain syndrome

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Editorial group: Cochrane Bone, Joint and Muscle Trauma Group. **Publication status and date:** New, published in Issue 12, 2015.

Citation: Smith TO, Drew BT, Meek TH, Clark AB. Knee orthoses for treating patellofemoral pain syndrome. *Cochrane Database of Systematic Reviews* 2015, Issue 12. Art. No.: CD010513. DOI: 10.1002/14651858.CD010513.pub2.

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ABSTRACT

Background

Patellofemoral pain syndrome (PFPS) is a painful musculoskeletal condition, which is characterised by knee pain located in the anterior aspect (front) and retropatellar region (behind) of the knee joint. Various non-operative interventions are suggested for the treatment of this condition. Knee orthoses (knee braces, sleeves, straps or bandages) are worn over the knee and are thought to help reduce knee pain. They can be used in isolation or in addition to other treatments such as exercise or non-steroidal anti-inflammatory medications.

Objectives

To assess the effects (benefits and harms) of knee orthoses (knee braces, sleeves, straps or bandages) for treating PFPS.

Search methods

We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (11 May 2015), the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library* 2015 Issue 5), MEDLINE (1946 to 8 May 2015), EMBASE (1980 to 2015 Week 18), SPORTDiscus (1985 to 11 May 2015), AMED (1985 to 8 May 2015), CINAHL (1937 to 11 May 2015), PEDro (1929 to June 2015), trial registries and conference proceedings.

Selection criteria

Randomised and quasi-randomised controlled clinical trials evaluating knee orthoses for treating people with PFPS. Our primary outcomes were pain and function.

Data collection and analysis

Two review authors independently assessed studies for eligibility, assessed study risk of bias and extracted data. We calculated mean differences (MD) or, where pooling data from different scales, standardised mean differences (SMD) with 95% confidence intervals (CI) for continuous outcomes and risk ratios (RR) with 95% CIs for binary outcomes. We pooled data using the fixed-effect model.

Main results

We included five trials (one of which was quasi-randomised) that reported results for 368 people who had PFPS. Participants were recruited from health clinics in three trials and were military recruits undergoing training in the other two trials. Although no trials recruited participants who were categorised as elite or professional athletes, military training does comprise intensive exercise regimens. All five trials were at high risk of bias, including performance bias reflecting the logistical problems in these trials of blinding of participants and care providers. As assessed using the GRADE approach, the available evidence for all reported outcomes is 'very low' quality. This means that we are very uncertain about the results.



The trials covered three different types of comparison: knee orthosis and exercises versus exercises alone; one type of orthosis versus another; and knee orthosis versus exercises. No trials assessed the mode of knee orthosis use, such as whether the orthosis was worn all day or only during physical activity. Two trials had two groups; two trials had three groups; and one trial had four groups.

All five trials compared a knee orthosis (knee sleeve, knee brace, or patellar strap) versus a 'no treatment' control group, with all participants receiving exercises, either through a military training programme or a home-based exercise programme. There is very low quality evidence of no clinically important differences between the two groups in short-term (2 to 12 weeks follow-up) knee pain based on the visual analogue scale (0 to 10 points; higher scores mean worse pain): MD -0.46 favouring knee orthoses, 95% CI -1.16 to 0.24; P = 0.19; 234 participants, 3 trials). A similar lack of clinically important difference was found for knee function (183 participants, 2 trials). None of the trials reported on quality of life measures, resource use or participant satisfaction. Although two trials reported on the impact on sporting or occupational participation, one trial (35 participants) did not provide data split by treatment group on the resumption of sport activity and the other reported only on abandonment of military training due to knee pain (both cases were allocated a knee orthosis). One trial (59 participants, 84 affected knees) recording only adverse events in the two knee orthoses (both were knee sleeves) groups, reported 16 knees (36% of 44 knees) had discomfort or skin abrasion.

Three trials provided very low quality evidence on single comparisons of different types of knee orthoses: a knee brace versus a knee sleeve (63 participants), a patella strap with a knee sleeve (31 participants), and a knee sleeve with a patellar ring versus a knee sleeve only (44 knees). None of three trials found an important difference between the two types of knee orthosis in pain. One trial found no clinically important difference in function between a knee brace and a knee sleeve. None of the three trials reported on quality of life, resource use or participant satisfaction. One trial comparing a patella strap with a knee sleeve reported that both participants quitting military training due to knee pain were allocated a knee sleeve. One poorly reported trial found three times as many knees with adverse effects (discomfort or skin abrasion) in those given knee sleeves with a patella ring than those given knee sleeves only.

One trial compared a knee orthosis (knee brace) with exercise (66 participants). It found very low quality evidence of no clinically important difference between the two intervention groups in pain or knee function. The trial did not report on quality of life, impact on sporting or occupational participation, resource use, participant satisfaction or complications.

Authors' conclusions

Overall, this review has found a lack of evidence to inform on the use of knee orthoses for treating PFPS. There is, however, very low quality evidence from clinically heterogeneous trials using different types of knee orthoses (knee brace, sleeve and strap) that using a knee orthosis did not reduce knee pain or improve knee function in the short term (under three months) in adults who were also undergoing an exercise programme for treating PFPS. This points to the need for good-quality clinically-relevant research to inform on the use of commonly-available knee orthoses for treating PFPS.

PLAIN LANGUAGE SUMMARY

Knee braces, sleeves or straps for treating anterior knee pain (patellofemoral pain syndrome)

Background

Patellofemoral pain syndrome (PFPS) is a painful knee condition that frequently affects young, physically active people. It is characterised by pain either to the front of the knee or behind the patella (knee cap). It is suggested that this may be caused by faulty alignment of the knee cap during knee movements. To help, some physiotherapists provide or people may purchase knee braces, sleeves or straps (termed 'orthoses') believed to correct this faulty alignment.

Review question

We wanted to find out whether wearing knee orthoses in people with anterior knee pain reduces knee pain, improves knee function and increases the ability to do everyday activities and sports. We also wanted to find out whether there are adverse effects, such as skin problems, associated with using a knee orthosis. We also wanted to find out what is the best type of knee orthosis and whether wearing a knee orthosis is better than other types of intervention such as exercise.

Study characteristics

We searched electronic databases and other sources up to June 2015 and found five relevant studies that reported the results for 368 adults with PFPS. Participants were recruited from health clinics in three studies and were military trainees in the other two studies. All five studies were small and at high risk of bias, which means that their findings may not be reliable.

The studies covered three different types of comparison: knee orthosis and exercises versus exercises alone; one type of orthosis versus another; and knee orthosis versus exercises. No study assessed the mode of knee orthosis use, such as whether the orthosis was worn all day or only during physical activity.

Key results



All five trials compared a knee orthosis (either sleeve, brace or strap) plus exercise versus exercise alone. These provided very low quality evidence that wearing a knee orthosis made no difference to knee pain (data from three studies) and function (data from two studies). None of the three studies reported on quality of life, resource use or participant satisfaction. One study reported that both participants quitting military training due to knee pain were allocated a knee orthosis. One poorly reported study found over a third of knees had discomfort or skin abrasion in those given a knee sleeve.

Three studies provided very low quality evidence on single comparisons of different types of knee orthoses: a knee brace versus a knee sleeve (63 participants), a patella strap with a knee sleeve (31 participants), and a knee sleeve with a patellar ring versus a knee sleeve only (44 knees). None of three studies found an important difference between the two types of knee orthosis in knee pain. One study found no important difference in function between a knee brace and a knee sleeve. None of the three studies reported on quality of life, resource use or participant satisfaction. One study comparing a patella strap with a knee sleeve reported that both participants quitting military training due to knee pain were allocated a knee sleeve. One poorly reported study found three times as many knees with discomfort or skin abrasion in those given knee sleeves with a patella ring than those given knee sleeves only.

One study (66 participants) compared a knee orthosis (knee brace) with exercise. It provided very low quality evidence of no clinically important difference between the two intervention groups in pain or knee function. It did not report on other outcomes including complications.

Conclusion

Overall, we found a lack of evidence to inform on the use of knee orthoses for treating PFPS. Our review found very low quality evidence from trials testing different knee orthoses (knee brace, sleeve and strap) that using a knee orthosis may not reduce knee pain or improve knee function in the short term (under three months) in adults who were also undergoing an exercise programme for treating PFPS. These findings point to the need for good-quality clinically-relevant research to inform on the use of commonly-available knee orthoses for treating PFPS.