Patellofemoral Pain Syndrome

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PROBLEM:

Anterior knee pain is a term used to encompass many conditions affecting structures of the knee. The majority of these cases can be attributed to patellofemoral pain syndrome (PFPS) or an abnormal tracking of the patella on the femoral groove secondary to changes in lower extremity alignment, muscle imbalance, or training errors.[2]

PFPS is the most common LE condition seen in orthopedic practice and the most common overuse injury in the active population[24] attributed to 25-40% of all knee problems in sports medicine centers and 25% of all injuries in runners.[1]

PFPS is more common in females who are 2.2 times more likely to experience PFPS than males.[3]

The diagnosis of PFPS can be elusive, but recent evidence suggests our strongest diagnostic test is resisted MMT of the quad (+ Likelihood ratio (LR) 2.2), but 2 of 3 positive tests within a cluster (pain with quad contraction, pain with squatting, and pain with palpation) demonstrated a (+) LR of 4.0.[7]

In addition, the eccentric step down test (+ LR 2.34, - LR .70) offers value for differential diagnosis and identifying precipitating or perpetuating impairments.[20]

INTERVENTION:

Conservative treatment remains the standard of care for PFPS with recommendations from the medical literature including relative rest (decrease aggravating activities), activity modification (shoes, terrain, training volume), and control of the inflammatory process.[2]

Authors note good, consistent, high-quality evidence supports Physical Therapy interventions for early management of PFPS.

Authors recommend individualized rehabilitation programs aimed at reducing forces crossing the patellofemoral joint.[2]

Physical Therapists may implement interventions tailored to a patient's specific symptoms including manual therapy, therapeutic exercise, proprioception training, taping, and orthoses.

EVIDENCE:

Manual Therapy: A recent literature review found level B evidence for the utilization of manual therapy on the lower quarter in patients with PFPS.[4]

Crossley demonstrated improved stair climbing function following manual therapy to the patellofemoral and tibiofemoral joints.[9]

An immediate decrease in quadriceps inhibition following lumbo-pelvic manipulation has been shown in patients with PFPS.[25, 26]

Further, Iverson, et al. demonstrated a >50% reduction in pain with functional activities following lumbopelvic manipulation in a subgroup patients with PFPS. One variable associated with success included a side to side difference in hip IR >16 degrees which improves the probability of success from 45% to 80% (+ LR 4.6).[15]

Recently Lowry et al. demonstrated improvements in pain and disability utilizing manual therapy to the lower quarter, exercise, orthotics and taping in a series of patients with PFPS.[17]

EVIDENCE continued on back...

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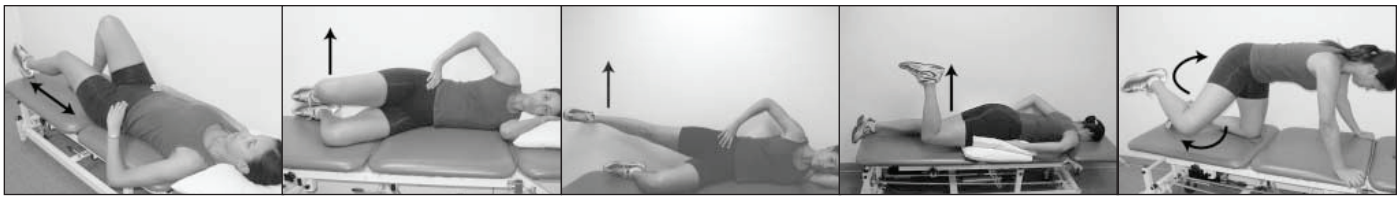
Exercise: Herrington examined the benefits of open chain compared to closed chain strengthening in patients with PFPS. Both groups improved short term strength and function, but no statistical differences were found between groups.[13]

A recent randomized, controlled trial demonstrated improved pain and function in a group of females with PFPS performing knee and hip strengthening compared to a knee strengthening and a control group.[11]

Mascal et al. demonstrated improved pain and function in two females with PFPS utilizing a proximal and distal lower quarter strengthening program.[18]

Clark et al. examined the efficacy of the individual components of physiotherapy in subjects with anterior knee pain. Patients who were in a group that included exercise were significantly more likely to be discharged at three months than non-exercising patients.[5]



Taping: Patellar taping produces a clinically meaningful change in chronic knee pain, but conflicting results indicates a subgroup of patients may be most appropriate for this intervention.[29]

Lescher, et al. developed a clinical prediction rule to determine which patients with PFPS would be most likely to benefit from patellar taping. Two variables, (+) patellar tilt test and >5 degree tibia varum, increased the probability of success from 52 to 83%.[16]

Derasari, et al. documented an inferior glide of patella produced through taping increased patellofemoral joint surface contact area and reduced pressure across the joint during functional activities in patients with chronic PFPS.[9]

Orthoses: PFPS has been associated with altered foot positioning which can alter mechanics at the knee leading to increased pain with activity. Orthotics have been shown to be effective at improving foot positioning and reducing knee pain in the short term.[19]

A randomized study evaluating the effects of custom orthotics for knee pain found custom orthotics were effective at decreasing knee pain and improving running tolerance.[14]

Foot orthotics were not superior to physical therapy management, nor was there any additional improvement by adding orthotics to a physical therapy programs.[6]

A recent systematic review supported the use of foot orthoses to prevent a first episode of overuse conditions and demonstrated no difference between custom and prefabricated foot orthoses. Evidence was insufficient to recommend foot orthoses for the treatment of lower limb overuse conditions.[23]

REFER:

Patients with anterior knee pain demonstrate improvements in pain and disability when referred to a licensed Physical Therapist with advanced training in manual therapy and exercise prescription.

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