The Effectiveness of Exercise on Recovery and Clinical Outcomes in Patients With Soft Tissue Injuries of the Hip, Thigh, or Knee: A Systematic Review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration

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Abstract

Objective: The purpose of this systematic review was to determine the effectiveness of exercise for the management of soft tissue injuries of the hip, thigh, and knee.

Methods: We conducted a systematic review and searched MEDLINE, EMBASE, PsycINFO, the Cochrane Central Register of Controlled Trials, and CINAHL Plus with Full Text from January 1, 1990, to April 8, 2015, for randomized controlled trials (RCTs), cohort studies, and case-control studies evaluating the effect of exercise on pain intensity, self-rated recovery, functional recovery, health-related quality of life, psychological outcomes, and adverse events. Random pairs of independent reviewers screened titles and abstracts and assessed risk of bias using the Scottish Intercollegiate Guidelines Network criteria. Best evidence synthesis methodology was used.

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Results: We screened 9494 citations. Eight RCTs were critically appraised, and 3 had low risk of bias and were included in our synthesis. One RCT found statistically significant improvements in pain and function favoring clinic-based progressive combined exercises over a "wait and see" approach for patellofemoral pain syndrome. A second RCT suggests that supervised closed kinetic chain exercises may lead to greater symptom improvement than open chain exercises for patellofemoral pain syndrome. One RCT suggests that clinic-based group exercises may be more effective than multimodal physiotherapy in male athletes with persistent groin pain.
Conclusion: We found limited high-quality evidence to support the use of exercise for the management of soft tissue injuries of the lower extremity. The evidence suggests that clinic-based exercise programs may benefit patients with patellofemoral pain syndrome and persistent groin pain. Further high-quality research is needed. (J Manipulative Physiol Ther 2016;39:110-120.e1)
Key Indexing Terms: *Knee; Knee Injuries; Hip; Hip Injuries; Thigh; Thigh Pain; Exercise*

Soft tissue injuries of the lower limb are common. In the United States, 36% of all injuries presenting to emergency departments are sprains and/or strains of the lower extremity.[1] Among Ontario workers, approximately 19% of all approved lost time compensation claims are related to lower extremity injuries.[2] Moreover, 27.5% of Saskatchewan adults injured in a traffic collision report pain in the lower extremity.[3] Soft tissue injuries of the hip, thigh, and knee are costly and place a significant economic and disability burden on workplaces and compensation systems. According to the US Department of Labor Bureau of Statistics, the median time off work for lower extremity injuries was 12 days in 2013.[4] Knee injuries were associated with the longest work absenteeism (median, 16 days).[4]

Most soft tissue injuries of the lower limb are managed conservatively, and exercise is commonly used to treat these injuries.[5] Exercise aims to promote good physical health and restore normal function of the joints and surrounding soft tissues through concepts which include range of motion, stretching, strengthening, endurance, agility, and proprioceptive exercises. However, the evidence about the effectiveness of exercise for managing soft tissue injuries of the lower limb is unclear.

Previous systematic reviews have investigated the effectiveness of exercise for the management of soft tissue injuries of the lower extremity. Reviews suggest that exercise is effective for the management of patellofemoral pain syndrome and groin injuries but not for patellar tendinopathy.[6-15] To our knowledge, the only review reporting on the effectiveness of exercise for acute hamstring injuries found little evidence to support stretching, agility, and trunk stability exercises.[16]

The purpose of our systematic review was to investigate the effectiveness of exercise compared to other interventions, placebo/sham interventions, or no intervention in improving self-rated recovery, functional recovery (eg, return to activities, work, or school), or clinical outcomes (eg, pain, health-related quality of life, depression) of patients with soft tissue injuries of the hip, thigh, and knee.

Methods

Registration

This systematic review protocol was registered with the International Prospective Register of Systematic Reviews on March 28, 2014 (CRD42014009140).

Eligibility Criteria

Population. Our review targeted studies of adults (≥ 18 years) and/or children with soft tissue injuries of the hip, thigh, or knee. Soft tissue injuries include but are not limited to grade I to II sprains/strains; tendonitis; tendinopathy; tendinosis; patellofemoral pain (syndrome); iliotibial band syndrome; nonspecific hip, thigh, or knee pain (excluding major pathology); and other soft tissue injuries as informed by available evidence. We defined the grades of sprains and strains according to the classification proposed by the American Academy of Orthopaedic Surgeons (Tables 1 and 2).[17] Affected soft tissues in the hip include the supporting ligaments and muscles crossing the hip joint into the thigh (including the hamstrings, quadriceps, and adductor muscle groups). Soft tissues of the knee include the supporting intra-articular and extra-articular ligaments and muscles crossing the knee joint from the thigh including the patellar tendon. We excluded studies of grade III sprains or strains, acetabular labral tears, meniscal tears, osteoarthritis, fractures, dislocations, and systemic diseases (eg, infection, neoplasm, inflammatory disorders).

Interventions. We restricted our review to studies that tested the isolated effect of exercise (ie, not part of a multimodal program of care). We defined exercise as any series of movements aimed at training or developing the body by routine practice or as physical training to promote good physical health.[18]

Comparison Groups. We included studies that compared 1 or more exercise interventions to one another or one exercise intervention to other interventions, wait list, placebo/sham interventions, or no intervention.