

Lower Extremity

This page only includes articles published in the last 5 years.

Osteoarthritis and Pain of the Lower Extremity

- A 2015 review on osteoarthritis (OA) found that land-based exercise for the hip reduced pain and improved physical function immediately after treatment with improvements sustained for 3-6 months. Additionally, exercise is recommended for the treatment of knee OA with improvement in muscle strength, short-term pain benefits and physical function including walking ability. This review also discussed biomechanical interventions for knee OA including braces and orthoses but did not report substantive evidence for their use.¹
- A 2013 systematic review evaluated the effectiveness of manual therapy and therapeutic exercise in the treatment of OA of the hip and found moderate evidence for improvement of function with therapeutic exercise, particularly with utilization of booster sessions. With regard to manual therapy, this review reported that “joint mobilization of known dosage showed short-term reduction of pain and decreased disability”.²
- A 2012 systematic review found fair evidence for manipulative therapy (MT) combined with multiple modalities or exercise therapy for short-term treatment of hip osteoarthritis; but limited evidence for long-term treatment for the hip. Additionally, they found fair evidence for support of MT of the knee kinetic chain and ankle/foot, combined with additional modalities or exercise therapy for short-term treatment of knee OA and patellofemoral pain syndrome.³

Ankle sprains

- A 2015 systematic review found that lower extremity mobilization in addition to home exercise and advice provided “short-term improvements in activities and function” for grade I-II ankle sprains of variable duration for adults.⁴
- A 2016 review⁵ found high-quality evidence that bracing and exercise therapy were beneficial in the prevention of ankle sprains; however, exercise interventions were heterogeneous and not adequately described in most studies. Also, it is unknown whether exercise reduces the severity of ankle reinjury, or if it helps allow an increase in exposures before an injury occurs. Evidence for ultrasound for acute sprains was insufficient.
- A 2014 systematic review on treatment for chronic ankle sprains found limited to moderate evidence for the effectiveness of a functional training program for improving function and pain and preventing recurrence of ankle sprains.⁷
- A 2014 systematic review on the efficacy of joint mobilization on lateral ankle sprains found that for acute, subacute and chronic ankle sprains, manual joint mobilization increased ankle range of motion, especially dorsiflexion, and decreased pain. Additionally, for subacute and chronic lateral ankle strains, they also found improvement in short-term functional outcomes.⁸
- A 2013 systematic review found that “static-stretching intervention as a part of standardized care yielded the strongest effects on dorsiflexion after acute ankle sprains.”⁹ The authors also found moderate support for passive joint-mobilization interventions for restoring normal ankle dorsiflexion after ankle sprains.
- A 2012 systematic review found fair evidence for MT of the knee kinetic chain and ankle/foot, combined with additional modalities or exercise therapy for short-term treatment of ankle inversion sprain.³

Plantar Fasciitis & Heel Pain

- A 2015 systematic review found short-term benefits with plantar fascia stretching for plantar heel pain.⁹
- When compared to multimodal care with ultrasound, statistically significant improvements in pain

and disability were reported using multimodal care with manual therapy (manipulation, mobilization) in 6 visits over 4 weeks, a 2016 review reported.¹¹ The review also found evidence to suggest multimodal care that included deep massage and mobilization by a PT was superior to multimodal care with ultrasound in the short term.

- Another 2016 systematic review supports the use of myofascial release for management of persistent plantar heel pain.¹⁰
- A 2012 systematic review found fair evidence in support of short-term MT treatment of the ankle and/or foot combined with multimodal or exercise therapy for plantar fasciitis.³

Achilles Tendinopathy

A 2012 mixed methods study integrating a systematic review with clinical reasoning found strong evidence for eccentric loading exercises and moderate evidence for splinting/bracing, active rest, low-level laser therapy and concentric exercises.¹¹

Patellofemoral Pain Syndrome

A 2016 review found that when compared to usual care, a clinic-based progressive exercise program may provide short- and long-term benefit when combined with education and advice to avoid pain-provoking activities for patellofemoral pain of variable duration.¹³ A second 2016 review¹⁴ found hip and knee exercises equally effective, the addition of a hip exercise to an exercise program showed benefit, and motor skill retraining improved pain in patients with abnormal hip alignment during running. Exercises typically addressed strengthening of the abductor and external rotator muscle groups.

Adductor-related Groin Pain

One 2016 review¹³ found that supervised clinic-based group exercise was more effective than multimodal care in promoting recovery for adductor-related groin pain. Another 2016 review evaluated a sample of male athletes and reported exercise in a group setting (3x/week for 8-12 weeks) with a PT is more effective than individual multimodal care (including laser, transverse friction massage, TENS, or stretching exercise) by a PT (2x/week for 8-12 weeks).¹¹

References

1. Bennell KL, Hall M, Hinman RS. Osteoarthritis year in review 2015: rehabilitation and outcomes. *Osteoarthritis Cartilage*. 2016 Jan;24(1):58-70. <https://www.ncbi.nlm.nih.gov/pubmed/26707993>
2. Romeo A, Parazza S, Boschi M, Nava T, Vanti C. Manual therapy and therapeutic exercise in the treatment of osteoarthritis of the hip: a systematic review. *Reumatismo*. 2013 May 27;65(2):63-74.
FREE FULL TEXT <file:///C:/Users/amy.minkalis/Downloads/644-1761-3-PB.pdf>
3. Brantingham JW, Bonnefin D, Perle SM, et al. Manipulative therapy for lower extremity conditions: update of a literature review. *J Manipulative Physiol Ther*. Feb 2012;35(2):127-166.
<https://www.ncbi.nlm.nih.gov/pubmed/22325966>
4. Southerst D, Yu H, Randhawa K et al. The effectiveness of manual therapy for the management of musculoskeletal disorders of the upper and lower extremities: a systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. *Chiropr Man Therap*. 2015 Oct 27;23:30.
FREE FULL TEXT <https://www.ncbi.nlm.nih.gov/pubmed/26512315>
5. Doherty C, Bleakley C, Delahunt E, Holden S. Treatment and prevention of acute and recurrent ankle sprain: an overview of systematic reviews with meta-analysis. *Br.J.Sports.Med*. 2017 Jan;51(2):113-25
<http://bjsm.bmj.com/content/51/2/113.long>
6. van Ochten JM, van Middelkoop M, Meuffels D, Bierma-Zeinstra SM. Chronic complaints after ankle sprains: a systematic review on effectiveness of treatments. *J Orthop Sports Phys Ther*. 2014 Nov;44(11):862-71, C1-23.
FREE FULL TEXT <http://www.jospt.org/doi/full/10.2519/jospt.2014.5221?code=jospt-site>
7. Loudon JK1, Reiman MP, Sylvain J. The efficacy of manual joint mobilisation/manipulation in treatment of lateral ankle sprains: a systematic review. *Br J Sports Med*. 2014 Mar;48(5):365-70.
FREE FULL TEXT
https://www.researchgate.net/profile/Michael_Reiman/publication/256120268_The_efficacy_of_manual_joint_mobilisationmanipulation_in_treatment_of_lateral_ankle_sprains_A_systematic_review/links/00b7d523baec23a5c200

[0000/The-efficacy-of-manual-joint-mobilisation-manipulation-in-treatment-of-lateral-ankle-sprains-A-systematic-review.pdf](#)

8. Terada M, Pietrosimone BG, Gribble PA. Therapeutic interventions for increasing ankle dorsiflexion after ankle sprain: a systematic review. *J Athl Train*. 2013 Sep-Oct;48(5):696-709.
<https://www.ncbi.nlm.nih.gov/pubmed/23914912>
9. Woitzik E, Jacobs C, Wong JJ et al. The effectiveness of exercise on recovery and clinical outcomes of soft tissue injuries of the leg, ankle, and foot: A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. *Man Ther*. 2015 Oct;20(5):633-45.
FREE FULL TEXT <https://www.ncbi.nlm.nih.gov/pubmed/25892707>
10. Piper S, Shearer HM, Côté P et al. The effectiveness of soft-tissue therapy for the management of musculoskeletal disorders and injuries of the upper and lower extremities: A systematic review by the Ontario Protocol for Traffic Injury management (OPTIMa) collaboration. *Man Ther*. 2016 Feb;21:18-34.
FREE FULL TEXT <https://www.ncbi.nlm.nih.gov/pubmed/26386912>
11. Sutton DA, Nordin M, Cote P, Randhawa K, Yu H, Wong JJ, Stern P, Varatharajan S, Southerst D, Shearer HM, et al. The Effectiveness of Multimodal Care for Soft Tissue Injuries of the Lower Extremity: A Systematic Review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. *J.Manipulative.Physiol.Ther*. 2016 Feb;39(2):95-109
<https://www.ncbi.nlm.nih.gov/pubmed/26976373>
12. Rowe V, Hemmings S, Barton C et al. Conservative management of midportion Achilles tendinopathy: a mixed methods study, integrating systematic review and clinical reasoning. *Sports Med*. 2012 Nov 1;42(11):941-67.
<https://www.ncbi.nlm.nih.gov/pubmed/23006143>
13. Brown CK, Southerst D, Cote P, Shearer HM, Randhawa K, Wong JJ, Yu H, Varatharajan S, Sutton D, Stern PJ, et al. 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. *J.Manipulative.Physiol.Ther*. 2016 Feb;39(2):110-20
<https://www.ncbi.nlm.nih.gov/pubmed/26976374>
14. Thomson C, Krouwel O, Kuisma R, Hebron C. The outcome of hip exercise in patellofemoral pain: A systematic review. *Man.Ther*. 2016 Dec;26:1-30
FREE FULL TEXT <http://www.sciencedirect.com/science/article/pii/S1356689X16306348>