

1. Medeiros J, Rocklin, T. Manual Therapy, Therapeutic Exercise and HipTrac for Patients with Hip Osteoarthritis: A Case Series. Orthopaedic Practice. 2017;29:1:17. https://www.orthopt.org/uploads/content_files/files/Medeiros.pdf

Manual, long-axis hip traction has been used for centuries to treat pain and dysfunction associated with hip osteoarthritis (OA). The purpose of this case series is to describe a rehabilitation program that was used to treat two patients with hip OA using this device in addition to manual therapy and therapeutic exercise. The primary outcome measures were the CareConnections Functional Index (CCFI), the Visual Analog Pain Scale (VAS), ROM, manual muscle tests, functional single leg squats and single leg dead lifts. Improvements in all outcomes measures were observed for both patients. Clinically meaningful improvements in self-reported function and pain were described by both patients two years post-treatment. Both patients reported that they had greatly benefited from combining the individualized manual therapy and therapeutic techniques with the in-clinic and home use of the HipTrac.

2. Abbott JH, et al., Manual therapy, exercise therapy, or both, in addition to usual care, for osteoarthritis of the hip or knee: a randomized controlled trial. 1: clinical effectiveness, Osteoarthritis and Cartilage (2013), <http://dx.doi.org/10.1016/j.joca.2012.12.014>

The Management of OsteoArthritis (MOA) Trial investigated the long-term effectiveness of: (1) an individualized manual therapy treatment program in addition to usual care; (2) a multi-modal, individualized, supervised exercise therapy program in addition to usual care; and (3) a combination of both programs in addition to usual care; compared with usual care only, for the management of pain and disability in adults with hip or knee OA. The results are consistent with those of Hoeksma et al., who found manual therapy, including the mandatory use of long axis traction, to be superior to exercise therapy for patients with hip OA. **Hoeksma's group found lasting treatment effects through 29 weeks, while this study found thru 52 weeks.** While this trial was not intended to compare these two modes of therapy, the manual therapy protocols provided greater reductions in WOMAC scores than did exercise therapy. The exercise group also showed significant improvements in WOMAC scores, just not as much as manual therapy. Overall, all groups improved the most at 9 weeks and maintained significant improvements at 1 year.

3. Hoeksma HL, Dekker J, Ronday HK, et al. Comparison of Manual Therapy and Exercise Therapy in Osteoarthritis of the hip: a randomized trial. Arthritis Rheum. 2004;51(5):722-729.

This randomized controlled trial compared the use of manual therapy and therapeutic exercises in patients with hip OA. The manual therapy group received traction of the hip joint, stretching techniques of shortened muscles surrounding the hip joint, and traction manipulation (high velocity thrust technique) in each limited position. The

exercise group's goal was to improve hip ROM, muscle length, and strength along with walking endurance. The outcomes for hip function (Harris Hip Score), ROM, and pain as measured by the visual analogue scale were compared for specific subgroups of hip OA depending on limited function, ROM, or level of pain. After 5 weeks of intervention, the success rate (primary outcome) of manual therapy was 81% versus 50% for exercise therapy (odds ratio, 1.92; 95% CI: 1.30-2.60). Manual therapy was found to be superior to exercise therapy in some patients with mild/moderate hip OA but was not shown to be any more effective than exercise in patients with highly limited function, ROM, or high levels of pain (severe OA). When intervention stopped, the improvements for in function for the exercise group declined after 5 weeks. **However, improvement lasted up to 29 weeks for the patients in the manual therapy group.**

4. Wright A, Abbot JH, Baxter D, Cook C. The ability of a sustained within-session finding of pain reduction during traction to dictate improved outcomes from a manual therapy approach on a patients with osteoarthritis of the hip. J Man Manip Ther. 2010;18(3): 166-172.

The objectives of this study were to: 1) determine the association of a within-session finding after traction of the hip with self-report of well-being, pain, and self-report of function at 9 weeks; and 2) to determine if the interactions between the within-session finding and the outcome measure are different between groups of patients with hip OA who receive and who do not receive manual therapy. **Significant differences did exist in the global rating of change and pain in the manual therapy group vs the non-manual therapy group.**

5. Vaarbakken, K. Superior effect of forceful manual traction mobilizations compared to standard mobilizations in treatment of painful hip hypomobility. Section for Physiotherapy Science, Department of Public Health and Primary Health Care. Faculty of Medicine, University of Bergen, Norway. 1-79.

This research compares long axis traction mobilization at standard and high forces to assess which is superior for improvements in pain and mobility. The group receiving graded traction mobilization forces up to 800 N experienced superior important clinical effects as compared to the other group receiving traction of much lesser forces. **The results suggest that a physical therapy program including higher forces with manual traction are effective in reducing self-rated hip disability in primary health care.**

6. Cleland, JA, Hoeksma HL, MacDonald CW, Smith M, Whitman, JM. **Clinical Outcomes Following Manual Physical Therapy and Exercise for Hip Osteoarthritis: A Case Series. Journal of Orthopaedic & Sports Physical Therapy. 2006;36(8):588-599.**

This case series described the outcomes of individual patients with hip OA treated with manual physical therapy and exercise. The series included 7 patients diagnosed with hip OA on the basis of the clinical examination. All patients were treated with manual physical therapy followed by exercises to increase hip strength and ROM. Six of 7 patients completed a Harris Hip Score at initial examination and discharge from physical therapy. **Patients exhibited reductions in pain and increases in passive ROM, as well as a clinically meaningful improvement in function.**

7. Cook KM, Heiderscheit B. **Conservative management of a young adult with hip arthrosis. J Orthop Sports Phys Ther. 2009;39(12):858-866.**

This case report describes management of a 28 year old female with severe left hip OA. She was seen for 12 visits over a 3 month period of time and treated with a combination of manual therapy (variations of long axis traction manipulations), therapeutic exercise, and neuromuscular re-education. **Substantial improvements were made in pain, ROM, strength, and function (modified Harris Hip Score of 97). She was also able to discontinue using anti-inflammatories and returned to her prior level of activity. She was able to maintain these improvements at a 3 month follow-up and managed her symptoms with a self-mobilization technique and massage to her hip flexors.**

8. King, L. **Case Study: Physical Therapy Management of Hip Osteoarthritis Prior to Total Hip Arthroplasty. J Orthop Sports Phys Ther. 1997;26(1):35-38.**

This case study describes a 51 year old patient mild Right Hip OA. Pt. was seen 3 x per week for 7 weeks. Treatment consisted of manual therapy (traction, mobilizations), stretching, strengthening, aerobic, and education. Pt's chief complaint of pain gradually decreased over first 5 weeks. By week 6, pt had no groin or thigh pain, with only minimal pain in SI joint region. Her ROM in flexion increased from 105 to 120, abduction 20 to 40, ER 20 to 30 and extension 5 to 20 deg. **She improved from painful ambulation with a cane to pain-free ambulation without assist device.**

9. Michael L. Voight, DHSc,† * Kevin Robinson, DHSc,† Lance Gill, MS,‡ and Karen Griffin, MS§ et al. **Postoperative Rehabilitation Guidelines for Hip Arthroscopy in an Active Population. Sports Health. May • June 2010; 222-230.**

This journal article discusses the evolution of hip arthroscopy and improved techniques for their management. Whereas mechanical problems can often be corrected through surgery, functional deficits must be corrected through the rehabilitation process. Therefore, the evolution of hip arthroscopy has necessitated a progression in hip rehabilitation to ensure optimal post-surgical results. They discuss

the importance of manual therapy combined with therapeutic exercise/movements to provide full rehabilitation. The common goal of hip rehabilitation is focus on the return to pain-free function of the hip joint. Outcome data indicate that this goal is being met. **Distraction techniques (longitudinal movement) are most useful when hip movements are painful. Longitudinal movements are produced by gently pulling on the lower extremity down the long axis of the femur. This technique can be assisted by a rolling or sliding motion with support under the patient's thigh in the direction of the treatment movement, and it can be performed in varying degrees of hip flexion.** In addition, capsular stretching can be specific with 3-dimensional mobilization by rotating the femur into the restrictive barrier and performing a longitudinal or inferior glide.

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