November Literature Review

Grimaldi A, Mellor R, Nicolson P, Hodges P, Bennell K, Vicenzino B. Utility of clinical tests to diagnose MRI-confirmed gluteal tendinopathy in patients presenting with lateral hip pain. Br J Sports Med. 2017;51(6):519-524.

Review Submitted By: Tyler France, PT, DPT, CSCS

Objective: The purpose of this study was to determine the diagnostic utility of various clinical tests for gluteal tendinopathy, using MRI as the reference standard.

Methods: 65 participants with lateral hip pain were examined using various clinical tests to evaluate their ability to detect MRI determined gluteal tendinopathy. Palpation of the greater trochanter and severe clinical pain provocation tests applying compressive and tensile loads on the gluteal tendons were investigated. MRI of the painful hip was examined by a radiologist who was blinded to clinical findings.

Results: Pain reported within 30 seconds of single limb stance on the painful leg conclusively moves a 50% pretest probability of gluteal tendinopathy presence on MRI to a post-test probability of 98% (specificity 100%, positive likelihood ratio ~12), whereas no pain on palpation of greater trochanter (80% sensitivity) would rule out its presence. 20 participants (31%) who had gluteal tendinopathy on MRI but clinically negative findings (not positive on palpation and another test).

Conclusions: The results of this study indicate that a patient who reports reproduction of their lateral hip pain within 30 seconds of single limb stance is very likely to have gluteal tendinopathy. Patients with lateral hip pain who are not palpably tender over the greater trochanter are unlikely to have MRI-detected gluteal tendinopathy.

Commentary: Though some of the results of this study are likely under-powered due to the relatively small sample size, this is one of the largest studies of its kind done to date. As always, we should be skeptical of the 100% specificity rate of the 30 second SLS test described in the article. I think that it is important that we keep some of these tests in mind when evaluating patient's with lateral hip pain, as many studies have shown that gluteal tendinopathy is the most common cause of pain in the lateral hip. The most interesting part of the study to me was the improvement in the diagnostic accuracy of these tests when a resistance component was added. Though the metrics of the FABER and ADD tests were already impressive, the sensitivity, specificity, PPV, and NPV of the tests improved when resistance was added at end range (FABER-R, ADD-R). If this concept proved to be true for other regions of the body, we may be able to improve the utility of many special tests.

Citation:

Warby SA, Ford JJ, Hahne AJ, et al. Comparison of 2 exercise rehabilitation programs for multidirectional instability of the glenohumeral joint: a randomized control trial. *Am J Sports Med*. 2017:1-11. doi:10.1177/0363546517734508

Review submitted by:

Jennifer M. Boyle

Objective:

The purpose of this study was to compare the effectiveness of the Rockwood instability program and the Watson MDI program on the functional and instability- specific outcomes, scapular biomechanics and muscle strength of participants with nontraumatic and nonstructural MDI.

Methods:

Multidirectional RCT that 41 participants attended either the Rockwood instability program or the Watson MDI program. They performed 30-minute physical therapy sessions for 12 weeks. Rockwood instability program was focused on concurrently strengthening all 3 aspects of the deltoid and IR/ER of the gh joint in two phases. The Watson MDI program was focused on retraining and maintaining good scapula and humeral head motor control prior to deltoid and RTC strengthening. The primary outcome measures utilized to measure were the Melbourne Instability Shoulder Score (MISS) and the Western Ontario Shoulder Index (WOSI).

Results:

There were no significant differences between the two treatment groups at week 6. At 12 weeks participants in the Watson MDI program had significantly greater improvements on the WOSI. At 24 weeks participants in the Watson MDI program had significantly greater improvements on the WOSI and MISS than the Rockwood program. Within group analysis showed that both groups had a significant improvement from baseline to each follow up on the WOSI and MISS.

Conclusions:

While looking at nontraumatic MDI of the GH joint, the Watson protocol shows significantly better outcomes that the Rockwood program at 12 weeks for the WOSI and 24 weeks for the WOSI and MISS.

Commentary:

This study has a lot to offer for a patient with MDI. The Watson protocol lays out 6 stages utilizing motor control training to restore a scapular deficit before initiating global shoulder strengthening. The high complexity of the Watson program may have lead to the decreased compliance of this group. This shows if you are going to utilize this program there needs to be a lot of patient education on the stages of this protocol and how the compliance is very important to get the best results in this exercise program.

Hevesi, Mario et al. "Multicenter Analysis Of Midterm Clinical Outcomes Of Arthroscopic Labral Repair In The Hip: Minimum 5-Year Follow-Up." *The American Journal of Sports Medicine* (2017): 036354651773418. Web.

Review Submitted by: Katie Long, PT, DPT

Objective: The three objectives of this study included (1) to determine patient-reported clinical outcomes at 5-year follow up following hip labral repair, (2) to determine effect of short-term risk factors on mid- to long-term follow up outcomes, and (3) to establish risk factors over time as patient groups differentiate.

Methods: Inclusion criteria: patients who underwent primary hip arthroscopic surgery with labral repair during study dates. Surgical candidates were determined to be those who had labral tears, chondral injuries or FAI who had failed non-operative management. Exclusion criteria: those unable to complete 5-year follow up; those who refused to participate in surveys, labral debridement or reconstruction; and those with previous history of hip surgery. 303 patients met inclusion criteria. Surgical technique: correction of cam and/or pincer when present, labral repair with concurrent debridement as indicated by surgeon, psoas release as indicated during physical exam, capsular repair performed by surgeon discretion based on patient demographics and PLOF. Rehab Protocol: standard protocol, crutches for 2-4 weeks with flat-foot partial WB, PROM beginning at 0 weeks, jogging at 3 months as tolerated, return to sport 5-6 months. Outcome measures: patient demographics, preoperative radiographic measures, surgical diagnoses (presence of cam/pincer morphology, femoral or acetabular chondromalacia, acetabular labral disruption, ligamentum teres debridement, psoas release), subjective pre- and post-operative assessments (visual analog scale, modified Harris Hip Score(mHHS), Hip Outcome Survey-Sports Specific Subscale (HOS-SSS)).

Results: Overall, significant improvements were reported for the VAS (3.5 points; MCID=2 points), mHHS (20.1 points; MCID= 9 points) and HOS-SSS (29.3 points; MCID= 25 points). Of the 303 patients included in the study, 37 (12.2%) underwent revision surgery. In those patients with BMI >30kg/m^3, mHHS scores were 9.5 points lower and HOS-SSS scores were 15.9 points lower on average. In those aged >35 years, mHHS scores were 4.5 points lower and HOS-SSS were 6.7 points lower on average. When compared to Tonnis radiographs of grade 0, those with Tonnis grade 2 had scores of mHHS scale 12.5 points lower and HOS-SSS scores 23 points lower on average. Those with BMI <30kg/m^3 and Tonnis grade 0 to 1 were predicted to have the most favorable outcomes following hip arthroscopic labral repair, while those with BMI >30kg/m^3 and Tonnis grade 2 were predicted to have the worst outcomes.

Conclusions: This article demonstrates that patients exhibit improved outcomes as assessed by the VAS, mHHS, and HOS-SSS at 5-year follow up. It also emphasizes potential indicators that predict a worse

outcome post surgically (increased age, BMI and Tonnis grade). This article adds to the body of literature showing sustained improvement in patient outcomes following hip arthroscopic labral repair to supplement established literature on short-term efficacy following surgical intervention. This article supports the use of hip arthroscopic surgery for providing lasting relief in those with labral tears and FAI. It also provides preoperative variables to serve as predictors of success for those considering hip arthroscopic repair.

Commentary: This article provides a good framework for expectations following hip arthroscopic labral repair at a longer follow up period than previously investigated in the literature. It is encouraging to note that patients who elect to undergo this surgery are having favorable outcomes at 5 years post-op. It is also helpful to be able to identify risk factors that may indicate poorer outcomes following hip arthroscopic surgery. The use of the HOS-SSS is also helpful, as many patients who undergo surgical labral repair are young, active individuals interested in getting back to their previous level of physical and recreational activities. Seeing the prolonged improvements in this outcome survey at 5 years for these patients is encouraging and useful clinically.

Young Athletes Cleared for Sports Participation After Anterior Cruciate Ligament Reconstruction: How Many Actually Meet Recommended Return-to-Sport Criterion Cutoffs? Toole AR et al. J Orthop Sports Phys Ther. November 2017. Vol 47(11): 825-833.

Review Submitted by Justin Pretlow, PT, DPT, OCS

Objective: Describe the proportion of athletes after ACL reconstruction cleared for sports participation who met individual and combined recommended return-to-sport criterion cutoffs. Hypothesis: A higher proportion of athletes who met recommended return-to-sport criterion cutoffs would maintain the same level of sports participation from time of return-to-sport clearance to 1 yr later compared to athletes who did not meet criterion cutoffs.

Methods: Prospective Cohort Study with participants recruited following ACL reconstruction. Inclusion criteria: 1. Primary, unilateral ACL reconstruction, 2. Completed rehabilitation program, 3. Cleared for unrestricted sports participation by a surgeon and rehab specialist, 4. Planning to return to cutting/pivoting sports on a regular basis. Pts with all graft types and meniscus repair or partial meniscectomy included. Exclusion criteria: 1. History of LBP requiring physician care in the past year, 2. Lower extremity injury or surgery beyond ACL reconstruction requiring physician care, 3. Concominant ligament injury beyond grade 1 MCL sprain, 4. Skeletal immaturity. Objective criterion cutoffs: Quad strength, Hamstring strength, single-leg hop tests(single hop, triple hop, crossover hop for distance, 6-meter timed hop), IKDC score. Criterion cutoff used in this study for strength measures and single leg hop testing was an LSI(Limb Symmetry Index) of 90% or greater. Criterion cutoff for the IKDC was a score of 90.

Results: 115 young athletes (avg age 17.5 yrs, avg time from ACL reconstruction to return-to-sport clearance 8.2 months). Proportion of athletes meeting individual cutoffs ranged from 43.5 % to 78.3%. Proportion of athletes meeting all criterion cutoffs (quad and hamstring LSI's, all 4 hop tests, and IKDC) was 13.9%. 66.1% of athletes maintained or increased their level of sports participation over the 1 year. A higher percentage of athletes who met the cutoffs for both strength tests maintained the same level of sports participation over the course of the 1 year study – 81.3% versus 60.2%.

Conclusion: The proportion of participants meeting combined cutoff criteria was low, ranging from 13.9% to 53.0%. The hypothesis was supported regarding athletes who met the strength cutoff criterion, with those athletes maintaining the same level of sports participation in higher proportions.

Commentary: More than half of the participants in this study were cleared for return-to sports with a quad strength limb symmetry index of less than 90%. The percentage who met the 90% LSI cutoff for quad and hamstring combined was less than 30%. The single leg hop test numbers are much better, with approximately 70% of the participants meeting the individual cutoffs. I think the numbers in this study reinforce the importance of not rushing the rehab process or returning to sports too quickly following ACL surgery. Some of the statistics could be useful with patient education, compliance, and setting realistic expectations. The cohort was young, athletic, and female dominant (about 75% female), which the authors listed as a limitation to the generalizability of the findings to all individuals. Other limitations relate to not accounting for return to sport factors in the biopsychosocial realm and not

incorporating pre-injury activity level data. Obviously, the scope of this study is narrow, but I think it highlights the importance of shooting for 90% or greater LSI to increase the athlete's chances of maintaining their level of sports participation post ACL reconstruction.

Thoracic manual therapy is not more effective than placebo thoracic manual therapy in patients with shoulder dysfunctions: A systematic review with meta-analysis. Bizzarri P et al. Musculoskelet Sci Pract. 2017 Oct 14;33:1-10. doi: 10.1016/j.msksp.2017.10.006. [Epub ahead of print]

Review Submitted by Sarah Bosserman

Objective: To compare the efficacy of thoracic manual therapy and placebo thoracic manual treatment on improving pain, mobility and function in patients with non-specific shoulder dysfunction.

Methods: Six electronic databases were searched, up until November 2016. Randomized clinical trials comparing the effects of thoracic spine manual treatment (mobilization and manipulation) to a placebo/sham thoracic manual treatment on patients with shoulder dysfunction were selected.

Results: Fifteen studies were screened for eligibility, and four studies met the inclusion criteria. Meta-analysis showed low quality evidence that thoracic manual therapy was not significantly better than placebo at the short term for "pain at present" (SMD -0.02, 95% CI -0.35 to 0.32; p>0.05, two trials). For the outcome of "pain during movement", there was very low-quality evidence that thoracic manual therapy was not more effective than placebo at short term (SMD -0.12, 95% CI -0.45 to 0.21; p>0.05, two trials). Furthermore, no difference between groups were reported for any of the functional outcome measures (PSS, GROC, SPADI). One trial did report a significant difference between groups for shoulder internal rotation following thoracic manual therapy (P<0.001), but not for shoulder flexion (p=0.2).

Conclusions: A single session of thoracic manual therapy does not seem to be more effective than placebo thoracic manual therapy in patients with shoulder dysfunctions for "pain at present" and "pain during movement" in the short term follow up.

Commentary: While there have been studies showing positive effects of thoracic manipulation on shoulder pain and/or ROM, the majority lacked a control group or only used healthy subjects. This review included RCTs using subjects with shoulder pain and that utilized a placebo treatment for comparison. The four studies had "generally good methodology", citing only one with high risk of bias. However, the results of this review only looked at immediate changes and therefore can not speculate on possible long-term outcomes beyond a single session of HVLA treatment directed at the thoracic spine.

The authors of this review concluded that the current studies do not support the use of specific thoracic techniques aimed to achieve improvements in the model of regional interdependence for the treatment of shoulder pain. However, cervical mobilizations have been shown to be effective in treating patients with shoulder pain, possibly related to the innervation of these structures by the cervical nerve roots (i.e. C5). Further, it points to studies that have shown how mechanical stimuli may initiate a number of potential neurophysiological effects, including ANS and opioid responses along with placebo related factors. Pain research literature suggests that placebo is an active hypoalgesic agent and can be modulated based on patient or therapist expectations and/or beliefs (Testa and Rossettini, 2016; Bialosky et al, 2017), helping to explain why pain decreased with both sham and manipulation treatments. Clinically, this review did point out that for a sub-group of patients with shoulder pain linked to GIRD, the improvement in IR ROM (6.5 degrees in the manipulation group) may be important, though studies have not identified the MCID for shoulder IR.