

clinical conduit



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Upcoming Course Schedule

Shoulder Course

Feb 10-11 Plano, TX

Lumbopelvic Course

Mar 31-Apr 1 Grapevine, TX

Pilates Course

Mar 24-25 Iowa City, IA
Aug 18-19 Plano, TX

Knee Course

Dec 9-10, 2006 Tulsa, OK
June 9-10, 2007 Plano, TX

Cervical Course

Nov 3-4, 2007 Grapevine

Foot-Ankle Course

Nov 18-19, 2006 St. Louis
Mar 3-4, 2007 Salina, KS
Sep 29-30, 2007 Grapevine



Is the supraspinatus weak or just have a poor anchor?

An interesting article was published in the September issue of the *American Journal of Sports Medicine* by Kibler, et al. They conducted a controlled laboratory study to investigate the effect of scapular positioning on the contractile strength of the supraspinatus. Their hypothesis was that abduction strength in symptomatic shoulder patients (the empty can position) would be influenced by scapular position (improved with concurrent scapular retraction encouragement) and be independent of the subject's pain level.

The underlying premise of this study is based on the concept of scapular dyskinesis as described by Burkhart, Morgan and Kibler in

the *Journal of Arthroscopy* in 2003. The test subjects had their supraspinatus strength measured under two conditions – first, with the subject assuming their natural posture and second, with an examiner providing a proprioceptive input to scapular retraction. This condition is commonly referred to as the “scapular retraction test” and is a special test used to evaluate the influence of the scapula's stability on symptom reproduction during arm elevation.

The test is performed by providing light pressure on the inferomedial border of the scapula in a position of retraction and posterior tilt while the patient actively lifts their arm in the scapular plane. A positive test is present if the patient reports a relief of impingement type symptoms through the previously painful arc. It typically indicates a need for scapular retractor training and an improvement in pectoralis minor flexibility.

While not investigated in this study a similar test called the scapular assistance test is used to evaluate the need for serratus/trapezius force couple training in patients with symptomatic arm elevation. In this test, the examiner facilitates upward rotation and posterior tilting by pushing laterally and upward on the inferior angle of the scapula and pulling the superior aspect of the scapula posteriorly while the patient actively elevates the arm. Rabin, et al, in the recent August issue of the *Journal of Orthopedic and Sports Therapy* found this test maneuver to have acceptable interrater reliability.

The contention of the Kibler study was that you need to know the true origin of a strength impairment. Is the demonstrable weakness due to an intrinsic muscle disorder (pain, atrophy, inhibition, or pathology), or poor prox-

- continued on page 2



Development of a diagnostic algorithm for sacroiliac joint pain using provocation tests

In my career I've memorized and used more special tests for sacroiliac dysfunction than any other joint in the body. Early in my practice I relied heavily on palpatory findings to identify innominate rotations and sacral torsions. I discarded reliance on these findings as my eye sight declined and appreciated the poor rater reliability in seeing these minute differences. Potter and Rothstein's article from the *Physical Therapy* journal showed poor (35-43%) intratester agreement on visually ...

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Supraspinatus strength continued ...

References

Kibler WB, Sciascia A, Dome, D. Evaluation of apparent and absolute supraspinatus strength in patients with shoulder injury using the scapular retraction test. *Am J Sports Med.* 2006; 34:1643-1647.

Rabin A, Irrgang JJ, Fitzgerald GK, Eubanks A. The intertester reliability of the scapular assistance test. *J Orthop Sports Phys Ther.* 2006; 36:653-60.

Burkhart SS, Morgan CD, Kibler WB. The disabled throwing shoulder: spectrum of pathology. Part III. The SICK scapula, scapular dyskinesis, the kinetic chain, and rehabilitation. *Arthroscopy.* 2003; Jul-Aug; 19(6):641-61.

Kibler WB, McMullen J. Scapular dyskinesis and its relation to shoulder pain. *J Am Acad Orthop Surg.* 2003 Mar-Apr; 11(2):142-51.

imal stabilization of the muscle's origin preventing a stable anchor for contraction? The results of this study suggest that the proximal position of the scapula has a significant effect on the resultant contractile ability of the supraspinatus, particularly in the symptomatic population. Both asymptomatic and injured subjects had noticeable decreases in their torque producing capability when not provided the scapular repositioning cue. See the chart below for details.

Supraspinatus Force Values (kg) for Empty Can Position (EC) and Scapular Retraction Test Position (SRT) for Injured and Control Groups*				
Group	EC	95% CI	SRT	95% CI
Injured	14 + 4.23	9.28 – 18.28	18 + 4.68	13.04 – 23.14
Control	29 + 16.19	22.62 – 35.34	33 + 18.20	26.29 – 40.57

* Scapular retraction position test results produced significantly greater torque production for both groups; CI = confidence intervals

It is important to note that pain inhibition did not seem to influence the results. Both the injured and controlled groups had low (and similar) visual analog scale reports of pain during the testing procedures. The take home message for me is that it is important to note where and how the patient fails as you provide substantial resistance to a manual muscle test. If the patient's scapula begins to rotate or tilt during a supraspinatus manual muscle test it should indicate that this is the weak link in the musculoskeletal chain and that early rehab emphasis should be directed at improving scapular stability. A similar interpretation should be considered if scapular retraction emphasis improves the contractile performance of the supraspinatus. Conversely, if scapular position has minimal effect on the torque generating ability of the supraspinatus you should suspect intrinsic impairment of the muscle.

“Do you have any advice for a dancer with pain in their big toe?”



M.S., PT - Arizona

Question of the Month



Sounds like flexor hallucis tendonitis. This is a common injury amongst ballet dancers or anyone that does repetitive “on toes” activities. The first thing I would recommend is symptom alleviation through activity modification. Some physicians will even immobilize to enforce rest. Prescriptive or over-the-counter NSAIDs may offer some relief. Typically this area is not injected with a corticosteroid because of the proximity of the posterior tibial nerve and artery. Be sure to rule out posterior tibialis tendonitis,

tarsal tunnel syndrome, and plantar fasciitis. Often this condition is confused by or accompanies an os trigonum as well.

From an intervention standpoint I would look for compensation to a varus deformity in the rearfoot or forefoot which could be addressed with tape or a medially posted orthotic. Sometimes a “turf toe” type strap will prevent or limit painful 1st MTP extension.

I would also recommend a very stiff midsole in the forefoot, a rocker bottom addition, or a steel spring insole in their shoe for everyday weight bearing activities. Finally, you may want to look for restrictions along the medial course of the tendon (particularly posterior to the medial malleolus) than can be freed up with soft tissue mobilization techniques.

Questions you would like addressed in a future issue can be sent to mulliganpt@comcast.net

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Important Studies

1. Laslett M, Aprill CN, McDonald B, Young, SB. Diagnosis of sacroiliac joint pain: validity of individual provocation tests and composites of tests. *Man Ther.* 2005; 10:207-218.
2. Riddle DL, Freburger JK. Evaluation of the presence of sacroiliac joint region dysfunction using a combination of tests: a multi-center intertester reliability. *Phys Ther.* 2002; 82(8):772-81.
3. Freburger JK, Riddle DL. Using published evidence to guide the examination of the sacroiliac joint. *Phys Ther.* 2001; 81(5):1135-1143.
4. Cibulka MT, Koldehoff R. Clinical usefulness of a cluster of sacroiliac joint tests in patients with and without low back pain. *J Orthop Sports Phys Ther.* 1999; 29(2):83-89.
5. Potter NA, Rothstein JM. Inter-tester reliability for selected clinical tests of the sacroiliac joint. *Phys Ther.* 1985; 65(11):1671-5.



"Featured Internet Link"



www.cebm.org

The Centre for Evidence-Based Medicine (EBM) is a research resource from Oxford University in the United Kingdom and their web site has a wealth of information relevant to evidence-based practice. They have tutorials and links to the five steps of EBM:

1. Asking Answerable Questions
2. Finding the Best Evidence
3. Critically Appraising the Evidence
4. Acting on the Evidence
5. Evaluating your Performance

You can download an executable file to create your computer-assisted critical appraisal tool (often called a CATMaker) to assist you with your interpretation of the literature. They also have a number of generic resources and tools such as tips for MEDLINE searches, study design comparisons, and calculators for sensitivity, specificity, likelihood ratio, confidence interval, and numbers needed to treat (NNT) statistics.

SJ Diagnostics continued -



recognizing the positional asymmetry of ASIS, PSIS, and iliac crests with palpation. Next my attention turned to using a cluster of examination findings (standing flexion test, PSIS palpation in sitting, supine to long sitting test, and the prone knee flexion test) as described by Cibulka in 1999, however, Freburger and Riddle (2001) pointed out that the high sensitivity, specificity and predictive validity of these tests may be suspect as the reported results were not evaluated against the gold standard of fluoroscopic aided anesthetic injections into the sacroiliac joint.

The article by Freburger referenced above suggested the only tests that provide appropriate evidence for sacroiliac joint provocation were the Patrick's test, palpation over the sacral sulcus, the thigh thrust (posterior shear test), resisted hip abduction, and iliac compression and gapping tests.

The most recent study of interest I read was published in *Manual Therapy* last year by Laslett, et al. In this study the authors evaluated six tests' ability to reproduce sacroiliac joint pain as judged by the results of an intra-articular anaesthetic block injection. From this investigation they develop a sequential testing algorithm to assist clinicians with the identification of sacroiliac dysfunction. The order of testing was iliac compression, thigh thrust, iliac compression, and a sacral thrust. The testing sequence can stop when two tests are positive. The iliac distraction and thigh thrusts are used first because of their high specificity and sensitivity respectively. This approach minimizes the number of provocation tests necessary for patients that present with unilateral buttock pain. The authors also noted that this testing algorithm is inappropriate for patients that have severe pain with all body movements. Finally, a negative finding on the four tests referenced above along with a negative Gaenslen's test effectively ruled out pathology of sacroiliac joint origin.

To say the least, sacroiliac joint diagnosis and management has undergone a lot of investigation in the last 10-15 years. I appreciate these author's contributions to our understanding of the prevalence, diagnosis, and appropriate interventions to manage this complex dysfunction.



Enhanced Features from the PT Journal

Have you recently checked out the features available on the *Physical Therapy* journal's web site? They have significantly enhanced the functionality with features that really help in your review of the literature. Here is a sampling of some of features available at www.ptjournal.org.



1. Some selected articles are published online 2-3 months prior to appearing in print.
2. You can register your email address to receive notification that a new issue is available online, complete table of contents for new issues, alerts for articles published ahead of print, and special announcements from the journal editors.
3. You can also register your email address for alerts whenever new content in *Physical Therapy* or other participating journals are published that match your submitted criteria (topics, authors, etc).
4. The "**Bottom Line**". You may have noticed that beginning in August most articles conclude with this feature. It is a clinical summary that translates study findings to clinical practice. It is not intended to substitute for critical analysis of the article but serves as a "supercharged" abstract. The "Bottom Line" contains
 - a. What problems the researchers set out to study and why
 - b. Who participated in the study
 - c. What new information the study offers
 - d. How the researches conducted the study
 - e. How the results of the study apply to PT practice
 - f. What limitations of the study and further research is needed
5. Search engine and archive of all online issues dating back to 1990.
6. Literature search tutorials and online tips for improved web browsing
7. Links to all annual conference abstracts dating back to 2002.

I think the editor and her board should be congratulated on this powerful resource to assist us with our daily practice needs. If you haven't been to the site in a while it is worth your time to check it out.

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Never beg for that which you have the ability to earn


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Happy Thanksgiving

Plantar Fasciitis Stretch



Management of patients with proximal chronic, recalcitrant plantar fasciitis can be a significant intervention challenge for the therapist. A study published in the Journal of Bone and Joint Surgery by DiGiovanni, et al (*J Bone Joint Surg* 2006; 88A:1775-1781) reminded me of the importance of plantar fascia specific stretching for this type of patient. In this prospective, randomized trial with a two-year follow up, patients who continued with this stretch had a decided improvement in pain and function. An earlier study had established the superiority of plantar fascia specific stretching to Achilles stretching at an eight week follow-up. While not dichotomized in these studies my personal experience is that this stretch is particularly helpful for the plantar fasciitis patient with a more rigid, cavus foot.

The stretch is performed in a sitting position with the involved extremity in a figure 4 position with the foot resting on the thigh. One hand stabilizes the calcaneus while the other hand simultaneously pulls the ankle into dorsiflexion and the toes into extension. A gentle tension should be felt along the course of the fascia. The patient is instructed to hold this stretch for 10-30 seconds and repeated 3-5 times; at least three times/day. Specifically, I ask the patient to perform the stretch first thing in the morning and after any prolonged non-weight bearing episodes.

Rehabilitation Exercise Technique



Featured Home Study Program

Orthopedic Examination and Treatment of the Hip

What are the factors that facilitate the development of hip osteoarthritis? Certainly congenital abnormalities such as Legg-Calves-Perthes disease, leg length discrepancies, or a Slipped Capital Femoral Epiphysis could alter the shape of the femoral head. Traumatic injuries producing labral tears, chondral defects, or stress fractures could increase the risk or accelerate the degenerative process. Obviously, activities of daily living and sports participation may also have an impact.



Two factors that have been implicated in the development of osteoarthritis that we can influence are gluteal weakness and a hyperfacilitated tensor fascia latae (TFL). Weakness of the gluteus medius alters the frontal plane center of gravity causing a more vertical force vector on the joint. TFL overactivity may facilitate anterior capsular restrictions. In a recent case report published in the August issue of the *Journal of Orthopedic and Sports Physical Therapy* the authors found that a program of manual therapy and therapeutic exercise addressing these issues resulted in decreased pain and an improvement in PROM and functional ability.

If you're interested in learning more about the orthopedic examination and treatment of common hip conditions you may want to look at our on-line home study. This inservice can be viewed or read free of charge. A post-test for CEU credit is available at <http://www.continuing-ed.cc/homestudy.htm> for a reasonable fee.

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