

clinical conduit

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Rehabilitation of the Throwing Shoulder – It's Different

Rehabilitation of the throwing shoulder is different than caring for the older, non-throwing shoulder patient. To begin with there are some unique considerations. While we often use the contralateral extremity as a benchmark of normal this is an inappropriate perspective in a population where asymmetry is not only typical, but expected. For instance, we expect 10-30° more external rotation on the dominant side with a concomitant loss of internal rotation. We also expect some joint laxity. Studies have shown that 66% of pitchers and 50% of positional baseball players have a positive sulcus sign with over 90% of these individuals have a positive sign on their non-dominant side as well. One could even argue that joint laxity may be selective benefit at higher levels of play.

There are a lot of theories on why throwers develop hyper external rotation on the throwing side (or a lack of int. rotation). A common reason to lose internal rotation in the non-athletic, adult patient is tightness in the posterior capsule; however, this is quite unusual in the overhead athlete. More likely the bias towards greater external rotation is based on developing humeral retroversion with a lot of throwing at a younger age.

The presence of a glenohumeral internal rotation deficit (GIRD) is only present when you have a loss of total rotation ROM with most or all of it coming from the deficit in int. rotation. In other words, asymmetrical rotation is an adaptive reaction to the typical stress put on the shoulder.

If there is a loss of internal rotation it should be addressed

with stretching activities. The question is what is the best internal rotation stretch? While the “sleeper” stretch is common in baseball, I prefer the horizontal adduction stretch with the scapula stabilized in retraction and external rotation. McClure’s study in *JOSPT* showed this to be a superior intervention for gaining lost internal rotation ROM.

When rehabilitating the throwing shoulder don’t forget to address the hips. Remember, ball velocity does not require a strong arm – but does require strong legs. It is not unusual to find gluteal strength deficits or deficiencies in sagittal and transverse plane motions in the hips of throwers.

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Upcoming Courses

Advanced Manual Therapy Series
Clinical Orthopedic Rehab Education



2011 Dates

- Part 1: Manual Therapy – Mar 5-6
- Part 2 Cervicothoracic – Apr 16-17
- Part 3 Upper Extremity – Jun 4-5
- Part 4 Lumbopelvic – Jul 16-17
- Part 5 Hip/Knee – Aug 27-28
- Part 6: The Lower Quarter – Oct 15-16

A detailed description of the course content and learning objectives is available at our web site — www.continuing-ed.cc

Scaphoid Shift Test



Ligamentous injury to the wrist results in instability and allows abnormal mechanics that produce weakness, stiffness, pain, and/or arthritic change. Instability can be caused by a single traumatic event or secondary to chronic attenuation of the supporting structures due to an underlying disease process (like rheumatoid arthritis). Probably around 20-30% of all carpal injuries result in some degree of instability. One of the more common instability patterns begins with a perilunar instability where the scapholunate interosseous ligament is disrupted.

The injury can progress to the capitulum joint (Stage II) where the capitate subluxes dorsally relative to the lunate and, then, lunotriquetral instability (Stage III) where the lunotriquetral ligament is injured allowing perilunar dislocation. The final stage of this carpal instability pattern is characterized by dislocation of the lunate from the radiolunate fossa.

The diagnosis of carpal instability is easy in the acute phase but more difficult if the impairment is chronic in origin. In these cases the patient may have complaints of weakness and feeling of giving way. They may also be ...



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Throwing Shoulder Rehab continued ...

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Reinold MM, Gill TJ. /Wilk. Current Concepts in the Evaluation and Treatment of the Shoulder in Overhead-Throwing Athletes. Part 1: Physical Characteristics and Clinical Examination. *Sports Health*. 2009. 2(1):39-50

Reinold MM, Gill TJ, Wilk KE, Andrews JR. Injury Prevention and Treatment Current Concepts in the Evaluation and Treatment of the Shoulder in Overhead Throwing Athletes. Part 2: Injury Prevention and Treatment. *Sports Health*. 2009 2(2):101-15.

Axe M, Hurd W, Snyder-Mackler L. Data-Based Interval Throwing Programs for Baseball Players. *Sports Health*. 1(2):145-53.

Throwers have a typical postural presentation as an adaptation to their sport. It is common to see rounded shoulders, forward head, and a depressed, protracted, and anteriorly tilted scapula on their dominant side. This type of posture is often associated with tightness in the pec minor, upper traps, and levator scapulae in combination with weakness in the lower traps, serratus anterior, and deep neck flexors. This resultant "forward scapular position" is highly correlated with the posterior shoulder tightness that limits glenohumeral internal rotation. I believe one of the keys to managing these postural adaptations is to keep the pec minor at a normal length. This can be a difficult task as the best way to put a stretch on the pec minor is to put the glenohumeral joint in an elevated and externally rotated position which may be contraindicated in a thrower that already has excessive anterior laxity. Consequently, manual stabilization of the rib cage needs to be ensured while mobilizing the scapula into external rotation, depression, and retraction.



Once the scapular base has been normalized, attention can be turned to strengthening the rotator cuff with a bias towards restoring the external rotator's eccentric quality and stabilizing control. I've found that manual interventions (such as rhythmic stabilization, timing for emphasis, and quick reversals) to be particularly helpful. These activities can be progressed to a plyometric focus, reactive drills, and integrated into core stability exercises as tolerated.

The final, and critical, element to rehabilitating the thrower is supervising an interval throwing program. There are a number of excellent resources to guide this return to sport phase. I think one of the best return to throwing programs, based on evidence, can be found at: <http://www.socortho.com/pdfs/Return-to-throwing-Axe.pdf>

What journals do you find helpful?

F.T., PT



Question of the Month: Journal Reading

I have a number of journals that I subscribe to and will provide a personal top ten list at the end of commentary. Of course, this list is my personal bias and represents the content I'm most interested in from a clinical and research perspective. Maybe a more objective means to evaluate a journal is by its impact factor.

A journal's impact factor comes from a journal citation report provided by the Thompson Institute for Scientific Information. Basically, the impact factor represents a measure of the frequency with which the "average article" in a journal has been cited in a given period of time.

The impact factor for a journal is calculated based on a three-year

period, and can be considered to be the average number of times published papers are cited up to two years after publication. For example, the impact factor 2011 for a journal would be calculated as follows:

A = the number of times articles published in 2009-2010 were cited in indexed journals during 2011

B = the number of articles, reviews, proceedings or notes published in 2009-2010

Impact factor for 2011 = A/B

Note that the impact factor 2010 will actually be published in 2011, because it could not be calculated until all of the 2010 publications had been received.

Here are my favorite journals with the impact factor indicated in parenthesis.

1. J Ortho Sports Phys Ther (2.5)
2. Am J Sports Med (3.6)
3. Physical Therapy (2.1)
4. J Athl Training (2.5)
5. Manual Therapy (2.3)
6. Int J Sports Phys Ther (NR)
7. Sports Health (NR)
8. J Should Elb Surgery (1.9)
9. J Bone Joint Surg (3.4)
10. Spine (2.9)

Also, each year Will Hopkins provides an update on journal impact factors highlighting the journals from the sports sciences and their impact factor % increase or decrease from the previous year. You can find his article at <http://www.sportsci.org/2010/wg-hif.htm>. For more information and a tutorial on impact factors, go to: <http://ebling.library.wisc.edu/portals/impact-factor/>

Questions you would like addressed in a future issue can be sent to mulliganpt@tx.rr.com

Scaphoid Shift Test for Wrist Instability

experiencing clicking or snapping sensations on certain wrist motions or with axial loading of the wrist.

The confirmation of scapholunate ligament instability begins with palpating for tenderness of the superficial ligaments. Pain may also be evident at the extremes of wrist motion. The most common special test used to evaluate for scapholunate instability is the Scaphoid Shift test as described by Watson in 1988.

In this test, the examiner's thumb is placed on the scaphoid tuberosity on the volar side of the wrist. Pressure is applied to the tuberosity as the wrist is passively brought from ulnar to radial deviation. This digital pressure attempts to block normal scaphoid flexion. In theory, if the scapholunate ligament is torn and scapholunate instability is present the proximal scaphoid subluxes dorsally over the rim of the radius. A positive result is when a painful "clunk" is elicited as the scaphoid reduces back into the radial scaphoid fossa as the thumb pressure is released. Although the diagnostic accuracy of this maneuver is not known it has been reported in the literature that the presence of false positives is possible in an asymptomatic population.

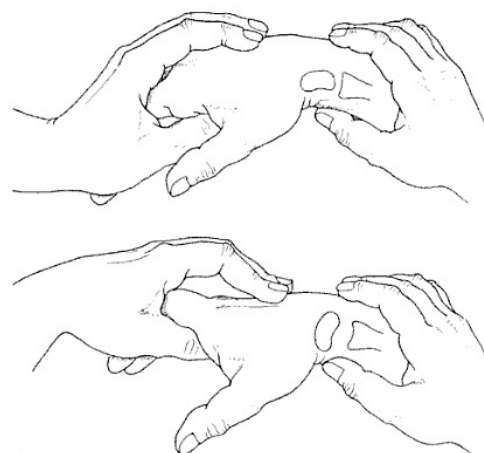


"Featured Internet Link"



www.spts.org

The Sports Physical Therapy Section is a chapter of the APTA and its web site has a number of valuable resources. On their web site you can find links to all three of their journals (*Sports Health*, *International Journal of Sports Physical Therapy*, and *the Journal of Sports and Orthopaedic Physical Therapy*) along with information on section activities. The site has a job board, member profiles, a news and events feature, and numerous links to educational activities. For younger clinicians there is also information on the "team mate" mentorship program.



Watson's Scaphoid Shift Test – dorsal pressure on the volar aspect of the scaphoid during passive radial deviation

Further confirmation of scapholunate instability can be evaluated by a ballotment test in which the lunate is stabilized by one hand while the scaphoid is translated in a dorsal/volar direction. Pain or laxity may indicate the instability pattern. The same type of technique (dorsal/volar stress) can be performed on a stabilized lunate to evaluate for lunotriquetral instability.

A great review article on the evaluation and management of this injury can be found in the *Journal of Hand Surgery* (Kuo CE, Wolfe SW. *J Hand Surg.* 33(6):998-1013.

Swearing Surgeons

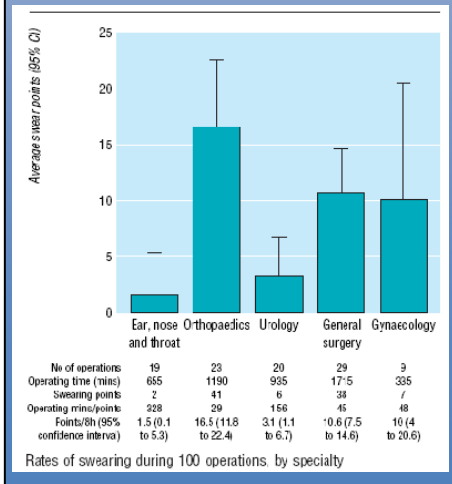


The British Medical Journal has a great sense of humor. Only in this reputable

journal could one get away with publishing a retrospective review on the frequency of cursing in the operating room. Of course we're all language challenged in traffic (at least I am) but who would have thought such blasphemy was uttered during surgery—good thing the patients are under general anesthesia.

In this study, audio recording of the conversation during one hundred consecutive elective operations was monitored. So much for informed consent. The cursing that occurred was classified into three categories reflecting the degree of vulgarity. For a string of swear words only the most obscene word was counted. I'm not making this up. The one hundred operations from five different surgical specialties totaled 80 hours of operating time. Ninety four swear words were heard with an average of one every 50 minutes. As the chart shows—orthopedic surgeons ran away with the cursing "trophy". As you can see in the chart below, orthopedists managed to spew two swear words/hour.

Fortunately you can't generalize this information to the physical therapy profession because, of course, we understand that profanity is the crutch of a conversational cripple (right?). Maybe these British surgeons subscribe to Mark Twain's advice – when angry, count to four; when very angry – swear.



Previous issues are archived at
www.continuing-ed.cc/newsletter.htm



"The art of medicine consists of amusing the patient while nature cures the disease."



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The "Clinical Conduit" newsletter is an every other month publication available to any allied health care provider free of charge upon request. Individuals who would like to be included on the email distribution list should contact the editor at mulliganpt@tx.rr.com



Smart Phone Applications



Here are some of my favorite "free" iPhone Apps. If you have a favorite (relevant to rehabilitation and/or medicine) I didn't include let me know. I'll publish any suggestions in a future newsletter.



PubMed on Tap Lite: allows me to find and display reference information

Epocrates— my preferred source for medication information



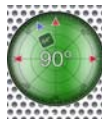
Medscape—largest medical reference application for conditions and diseases

ICD-9 Codes—contains all 13,677 ICD-9-CM diagnoses



iRadiology—quick review of classic radiology cases

RH Labs—reference for normal adult and pediatric lab values



Tiltmeter – inclinometer app for measuring range of motion



Featured Home Study Program Plantar Fasciitis



An upcoming study in the *Journal of Orthopaedic and Sports Physical Therapy* found that temporary customized foot orthotics along with a stretching program for the gastroc/soleus complex and intrinsic plantar fascia provided significant relief from first step heel pain and improved function as evaluated by self-report outcome measures in subjects with plantar fasciitis. While this study was only a prospective, single group cohort study (as opposed to a randomized controlled trial) it does provide some preliminary evidence to support these interventions. In addition to these treatments I believe it is important to address joint impairments and intrinsic strength deficits of the foot musculature. If you are frustrated in managing this patient population you may benefit from a comprehensive overview of the condition in one of our home studies titled "Plantar Fasciitis. The study covers



pathoanatomy, predisposing risk factors, intervention evidence, and post-operative management. This study is available free of charge on our web site at www.continuing-ed.cc/homestudy.htm. If you need CEU credit it is available by completing a post-test for a reasonable fee. All of our home studies are approved for clinicians licensed in Texas and Oklahoma.

Home Studies Now Available

Study and learn at your own pace at home!

Medical Screening for the PT	.3 CEUs
Knee Osteoarthritis	.2 CEUs
Pharmacology for the PT	.2 CEUs
Radiology for the PT	.3 CEUs
Goniometry 101	.2 CEUs
Foot-Ankle Anatomy	.3 CEUs
Achilles Tendinopathy	.2 CEUs
Lateral Ankle Instability	.2 CEUs
Plantar Fasciitis	.2 CEUs
Knee Meniscal Injuries	.2 CEUs
Orthopedic Hip Injuries	.2 CEUs
Principles of Joint Mobilization	.2 CEUs
Functional Anatomy of the Shoulder	.3 CEUs
Scapular Significance: Ortho Perspective	.2 CEUs
Proximal Humerus Fracture Rehab	.2 CEUs
Subacromial Impingement Syndrome	.2 CEUs
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