

# clinical conduit

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## 2010 Schedule



**Lumbopelvic Course**  
April 10-11, 2010  
- Plano, TX



**Cervical Course**  
Nov 13-14, 2010  
- Plano, TX



Advanced Orthopedic Physical  
Therapy Series - Dallas, TX

- Part 2: Cervicothoracic Spine: Mar 27-28
- Part 3: Upper Extremity: May 15-16
- Part 4: Lumbopelvic Spine: Jul 17-18
- Part 5: The Hip and Knee: Aug 21-22
- Part 6: The Lower Quarter: Sep 25-26

A detailed description of the course content and learning objectives is available at our web site — [www.continuing-ed.cc](http://www.continuing-ed.cc)

## Lumbar Accessory Motion Testing



A common examination technique in evaluating patients with low back pain is to assess the accessory motion available at each segment. The typical examination protocol has the patient in prone lying and the therapist standing alongside the plinth with manual contact between the lumbar spinous process and the examiner's hypothenar eminence just proximal to the pisiform bone. From this position the examiner applies a force from posterior to anterior in a direction perceived to be perpendicular to the tangent of the arc of the lumbar lordosis. The force is applied slowly and the amount of motion and/or the de-

gree of stiffness is then gauged by the examiner.

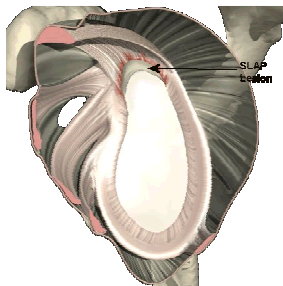
Although more discriminating scales have been proposed most therapists simply use a trichotomous (3-point) scale of hypomobile, normal, or hypermobile to grade the assessment. The next question to ask is what reference standard you're using to make this evaluation - "normal mobility" or "mobility in comparison to other lumbar segments". The problem with "normal mobility" is that it's based on your own personal experience (read bias) and how much force you used to generate your appraisal. I often debate with myself the sensation I feel let alone would that be a similar conclusion if evaluated by a colleague. This speaks to the intratester and intertester reliability of the assessment. We know from multiple research studies that

this level of consistency and repeatability is somewhat suspect (Landel R, et al, *Phys Ther*, 2008). This can be problematic if I'm using the findings to direct my interventions.

For instance, this is one of the primary evaluative findings I use when classifying a patient into the stability or mobility categories of lumbar intervention clinical prediction rules. A lack of hypermobile findings would certainly lend evidence (along with a low FABQ score, absence of aberrant lumbar motion, and



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## Why is it so tough to diagnose a SLAP Lesion?

Superior labral lesions of the glenohumeral joint are notoriously difficult to accurately detect on clinical examination. As evidence to the challenge of recognizing this pathology, McFarland, et al, recently reported there have been at least 26 tests described in the literature that purport to identify this injury. These tests have all come under intense scrutiny in recent years as conflicting reports on the accuracy of these tests have been published.

Commonly, the accuracy reported by the test originator has not been reproduced in validation studies of independent cohorts. In fact, a systematic literature review by Dessaur, et al, in *JOSPT*, 2008 evaluated 17 peer-reviewed manuscripts and noted that the majority of studies reporting highly accurate tests for SLAP lesions were of low quality with the results not supported by the original researchers.

So why is it so tough to identify this problem? The diagnostic accuracy of SLAP tests will probably never be great for a variety of reasons.

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## Lumbar Accessory Motion Testing continued ...

### REFERENCES

Landel R, Kulig K, Fredericson M, Li B, Powers CM. Inter-rater reliability and validity of motion assessments during lumbar spine accessory motion testing. *Phys Ther.* 2008 Jan ;88(1):43-9. Epub 2007 Nov 20.

Maher C, Adams R. Reliability of pain and stiffness assessments in clinical manual lumbar spine examination. *Phys Ther.* 1994 Sep;74(9):801-9; discussion 809-11.



and a negative prone instability test) to making stabilization exercise a likely ineffective treatment. Conversely, if I'm sure I detect hypomobility (along with an acute onset, no radicular pain below the knee, and normal hip IR) I might feel that mobilization and/or lumbar manipulation to be an important ingredient in the patient's success.

The next question that should be considered is how we interpret our lumbar PA spring testing findings. Am I reflecting on the amount of movement present, the stiffness detected (force required to create the movement), or the amount of pain produced during the accessory movement assessment? I would propose that the most accurate indicator would be the amount of pain produced by the spring test. While each patient interprets the pain differently the use of a numerical pain rating scale applied to the level of discomfort may be the best means to decide on a treatment intervention and to which segment it would be most important to direct your clinical care. (Maher C, *Phys Ther*, 1994)

Until we can demonstrate better reliability in our manual assessment I would caution using this impairment finding as a definitive indicator of outcome success. At this point we are too unreliable and research has not shown this technique to be a valid assessment of lumbar segmental mobility (as confirmed by concurrent dynamic MRI assessment) to let this be a sole indicator by which to select appropriate treatments. That said, spinal mobilization (including PA mobs) can be a valuable treatment technique for patients with non-specific low back pain. I would just use other outcome measures such as pain levels, lumbar ROM, patient satisfaction, and improvements on the Oswestry Disability Index as the gauge by which to judge your effectiveness.



*I've heard a lot about the platelet-rich plasma injections recently. Have you seen any patients who've had this procedure? How does it impact rehab?*

*T.M., PT*

### References:

Peerbooms JC, et al. Positive effect of an autologous platelet concentrate in lateral epicondylitis in a double-blind randomized controlled trial. *Am J Sports Med.* 2010 38(2):255-62

deVos RJ, et al. Platelet-rich injection for chronic Achilles tendinopathy. *JAMA.* 2010 303(2):144-149



## Question of the Month – Platelet-Rich Plasma Injections

Platelet-rich plasma (PRP) is defined as an increase in the concentration of platelets and their associated growth factors. I was first aware of this intervention a few years ago when Hines Ward of the Pittsburgh Steelers had the injection in an attempt to accelerate healing in an injury to his MCL. Since tendon and ligament healing relies on an adequate blood supply and cell migration it has been theorized that PRP may help the body regenerate and heal by harnessing these growth factors to enhance cell proliferation and matrix synthesis. To obtain the PRP, a small amount of blood is drawn from the patient and then spun in a centrifuge to isolate the PRP and growth factors. The PRP is then injected into the injured area to assist in connective tissue repair. PRP injections have been used for a variety of injuries including chronic tendinopathies at multiple locations. They have also been tried in conjunction with surgical

procedures such as rotator cuff repairs, ACL reconstructions, and meniscal repairs. While I'm not an expert in how it is delivered the goal the same for all of these conditions - to enhance healing in "biologically at risk" tissues.

Generally speaking, PRP injection success is evaluated by its impact on pain and function. To this end a couple of interesting studies have been published in the past few months. The first study was published in *JAMA* last month and received quite a bit of notoriety in the medical community. The study was a stratified, block-randomized, double blind, placebo controlled trial evaluating the additive benefit of PRP injections to a program of eccentric training for subjects with mid-tendon Achilles Tendinopathy. At a 6 month follow-up there was no difference between the group that received saline (placebo) and PRP injections. While there was no difference between groups there was an improvement in pain and function in both groups speaking to the benefit of the eccentric training.

The second study was published in

the February issue of the *American Journal of Sports Medicine*. This randomized controlled trial compared the benefit of corticosteroid vs. PRP injections in subjects with chronic tennis elbow. While the pain and function was better for the corticosteroid injection group for the first 2-3 months the group with the PRP injection had much better results at 6 and 12 months.

As to your question about modifying your rehab program I would recommend rest for the first 24 hours, gentle stretching for the next 2 weeks and then a return to the eccentric exercise progression.

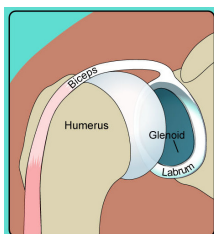


Questions you would like addressed in a future issue can be sent to [mulliganpt@tx.rr.com](mailto:mulliganpt@tx.rr.com)

**References:**

McFarland EG, et al. Clinical and imaging assessment for superior labrum anterior and posterior lesions. *Current Sports Medicine Reports*. 2009; 8(5):234-39.

Desaur WA, et al. Diagnostic accuracy of clinical tests for superior labral anterior posterior lesions: a systematic review. *J Orthop Sports Phys Ther*. 2008; 38(6):341-52.

**SLAP Lesions**

continued -

1) The great propensity for concurrent co-morbidities which will directly influence the specificity of the tests.

2) The different types (I-IV) of superior labral lesions that all may be more or less sensitive to the different kinds of shear, tension, or compression stresses provided by each unique special test.

3) The inconsistency in even the best of reference standards (lack of agreement upon the presence or type of lesion even under direct arthroscopic visualization)

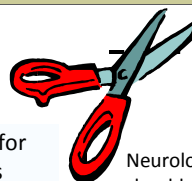
4) The fact that the each examiner has a unique skill set when applying the special tests. It may be that the originator of these tests has a keener appreciation or feel for the subtleties of the examination.

As suggested above the SLAP tests could generally be divided into three methods to elicit the symptomatic response of concern. Tests to catch or click the labrum, tests that create shear at the humeral head vs. glenoid labrum interface, or tests that generate tension in the long head of the biceps which inserts at the superior glenoid tubercle.

It is most likely that different tests will result in different specificity and sensitivity results based on the exact type of SLAP lesion that is actually present. For example, overhead athletes with a type II or IV posterolateral peel back labral lesions may be more symptomatic during tests that simulate the aggravating throwing motion such as the passive ER with Resisted Supination, Biceps Load II, Clunk, Crank, and Pain Provocation tests; whereas patients with type I or III SLAP lesions due to a traumatic type of injury may be more responsive to tests that provide compression to the labral complex such as the active-compression, passive compression, compression-rotation and anterior slide tests. If this perspective is true you may be best served to select the special test based on the patient's subjective history and mechanism of injury.

If your patient is a non-athlete who fell on an outstretched arm, you probably don't need to perform any tests that simulate a peel-back lesion. And vice-versa, if your patient is an overhead athlete with a desk job that only feels pain while doing overhead weekend sporting activities, you can probably rely more on the tests that create tension on the bicep/labral complex.

It may be that we need a constellation of findings to heighten our diagnostic accuracy. If you cluster a couple of tests with known high specificity (to rule in) with a couple of tests proven to be sensitive (to rule out) you may be more likely to uncover the pain generating lesion.

**Neuro Screen****Clip and Save**

Neurological Screening is an essential skill that should include a myotomal, dermatomal, and deep tendon reflex assessment in any patient in which the history suggests its necessity.

Please find below a quick reference for testing the UQ, LQ, or cranial nerves.

**Upper Quarter Dermatomes**

- C4 – Shawl area
- C5 – Lateral Deltoid
- C6 – Posterior Thumb
- C7 – Posterior distal 3rd finger
- C8 – Ulnar border 5th finger

**Upper Quarter Myotomes**

- C4 - Shoulder shrug
- C5 - Shoulder abduction
- C6 - Elbow flexion or wrist extension
- C7 - Elbow extension or wrist flexion
- C8 - Thumb extension
- T1 - Finger abduction

**Upper Quarter Deep Tendon Reflexes**

- C5 - Biceps
- C6 - Brachioradialis
- C7 - Triceps
- Motor Neuron Lesions – Hoffman's Reflex

**Lower Quarter Dermatomes**

- L2 – Mid Anterior Thigh
- L3 – Medial Femoral Condyle
- L4 – Medial Malleolus
- L5 – Dorsum 3rd MTPJ
- S1 – Lateral Heel
- S2 – Popliteal Fossa

**Lower Quarter Myotomes**

- L2 – Hip Flexion
- L3 – Knee Extension
- L4 – Ankle Dorsiflexion
- L5 – Big Toe Extension
- S1 – Ankle Eversion
- S2 – Knee Flexion

**Lower Quarter Deep Tendon Reflexes**

- L4 – Patellar Tendon
- L5 – Posterior Tib
- S1 – Achilles Tendon
- Motor Neuron Lesion - Babinski

**Cranial Nerve Exam**

- CN 1:** Olfactory – smell coffee with eyes closed
- CN2:** Optic – read something with one eye closed
- CN 3, 4, 6:** Oculomotor, Trochlear, Abducens – assess eye movement and note any ptosis
- CN 5:** contract muscles of mastication
- CN 7:** Facial – Eyebrows up/down; purse lips; show teeth. If patient is unable to whistle, wink or close one eye may be indication of Bell's Palsy
- CN 8:** Auditory – ability to hear the spoken word with eyes closed
- CN 9, 10:** Glossopharyngeal, Vagus – ability to swallow
- CN 11:** Spinal Accessory – manual muscle test the upper traps or sternocleidomastoid
- CN 12:** Hypoglossal – can stick tongue out and move it side to side

**"Featured Internet Link"****Ask Medline**

<http://askmedline.nlm.nih.gov/ask/pico.php>

Did you know that MedLine (the searchable database used by the National Library of Medicine's PubMed) can search the literature to answer your questions framed in a PICO format? I've found this to be a very efficient method to perform a foreground search on a specific topic of clinical interest during my patient care. For those that might have forgotten, the elements of the PICO format are Patient, Intervention, Comparison, and Outcome. For more information on how to form a PICO question please look at the article in [Issue 2:6](#).



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Spectacular achievement is  
 always preceded by  
 unspectacular preparation



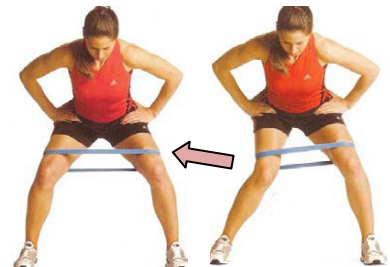
## Standing Clam Shells

## Rehabilitation Exercise Technique

Hip abduction and external rotation weakness has been implicated as a potential causative factor in a number of pathologies in the lower quarter. Any easy exercise to use in the home program as the patient assumes weight bearing function is the resisted clam shell in a standing position. To perform the exercise the patient wraps tubing around the lower third of the thigh and assumes a stance position with the hands on the waist. It is important to instruct the patient to use the hands to monitor the pelvic position. The pelvis should remain still and not rotate in the transverse plane. The aim of the exercise is abduct and externally rotate at the hip. The picture below shows a unilateral exercise but some patients find it easier to perform this exercise bilaterally if they are having trouble keeping the pelvis still.

The presence of a collateral ligament injury or rotatory instability of the knee may be contraindications for the exercise if it reproduces the patient's knee pain complaint.

Don't be surprised about the relatively small arc of motion some patients will be able to control. This may indicate significant limitation in hip mobility than can be addressed simultaneously with your manual therapy.



## Featured Home Study Program Pharmacology Home Study

Non-steroidal anti-inflammatory medications (NSAIDs) are probably the most common medication taken by patients seen in outpatient physical therapy clinics. These medications are available over-the-counter (Ibuprofen, Motrin, Aleve) or as a prescription (Celebrex, DayPro, Relafen). NSAIDs are effective for both providing analgesia and reducing inflammation by blocking the effect of the cyclooxygenase enzyme. When blocked, the body cannot produce the prostaglandins that cause pain and swelling. However, these drugs are not without potential side effects. The most common problem is irritation of the stomach lining (not as likely with the prescriptive medications that only work on the COX-2 inhibitors). While physical therapists do not prescribe this medication we must be aware of the potential adverse reactions such as increased bleeding/bruising, sodium retention which could impact kidney and cardiac function, and ulcers. These events are even more likely with higher doses in older patients who have a history of gastrointestinal irritation, taking blood thinning medications, or are concurrently taking anti-depressant medications. Another important consideration is the dosage. Each of these NSAIDs have maximal doses, time to onset, and duration of relief. It is not uncommon that patients may mistakenly take both over-the-counter and prescribed steroidal or non-steroidal anti-inflammatories without recognizing the risk of NSAID-induced gastropathy. If you'd like a thorough review of the safety and rehabilitation considerations of the major drug classifications and how to appropriately modify your therapeutic interventions we have a home study entitled "Pharmacology for the PT". A post-test for CEU credit is available at <http://www.continuing-ed.cc/homestudy.htm> for a reason-able fee 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
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
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