

# clinical conduit



## Inside this issue

Thoracic Manipulation for Impingement Syndrome	1
Clinical Prediction Rules for Carpal Tunnel Syndrome	1
Fall Risk Assessment	2
APTA Vision 2020	3
Transversus Abdominis Training	4
Scapular Significance Home Study	4



## Thoracic Manipulation for the Patient with Subacromial Impingement Syndrome

An interesting study was published in *Manual Therapy* ahead of print earlier this summer regarding the immediate impact of thoracic thrust manipulation in the management of patients with a classic presentation of subacromial impingement syndrome. Based on the philosophy of regional interdependence we appreciate how dysfunction in the cervicothoracic spine could have influence on the function of the shoulder. Previous studies have also shown how manipulation of the thoracic spine can have a positive effect

on cervical radicular symptoms. In the introduction of this study the authors also remind us of the cumulative value of utilizing both manual therapy and exercise in the management of patients with soft tissue disorders of the shoulder.

The study was an exploratory, single group pre-test, post-test design that evaluated the benefit of a grade V (high velocity, low amplitude) thoracic extension thrust at the mid-thoracic level and cervicothoracic junction areas for 56 patients that met the inclusion criteria. Periodically a rib manipulation was employed if tenderness was detected at a rib

angle. The outcome of the intervention was evaluated 48 hours later by reassessing the subject's pain on a numerical pain rating scale and re-gauging their outcome score on a functional disability scale (SPADI - Shoulder Pain and Disability Index). Additionally, the subjects rated their satisfaction regarding their change in status. The data was analyzed using paired t-tests with a relatively strict alpha level of 0.01 to minimize the chance for a Type II error.

- continued on page 2

## Remaining 2008 Courses

### Cervical Course

Nov 15-16, 2008 - Plano, TX

### Tentative 2009 Course Schedule

#### Shoulder Course

Apr 4-5, 2009 - Plano, TX

#### Lumbar Course

May 16-17, 2009 - Grapevine

#### Knee Course

July 11-12, 2009 - Plano, TX

#### Athletic Performance Course

Aug 15-16, 2009 - Grapevine

#### Foot-Ankle Course

Sep 19-20, 2009 - Grapevine

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)



## A Clinical Prediction Rule for Carpal Tunnel Syndrome

One of the most common wrist and hand injuries seen in an outpatient physical therapy setting is carpal tunnel syndrome (CTS). This condition is defined as a compressive neuropathy of the median nerve as it traverses the tunnel resulting in pain, paresthesia, and weakness in the median distribution of the hand. Typically, this diagnosis is presumptive based on a thorough examination and subsequently confirmed with an imaging study or other diagnostic means such as an EMG or nerve conduction velocity study. While these tests are helpful in determining the site and severity of the compression neuropathy they can also be painful and expensive.

Electrodiagnostic testing has been shown to be both a sensitive and specific tool for diagnosing CTS. With the use of clinical prediction rules we may be able to be just as accurate with our clinical examination in identifying this pathology based on research by Wainner, et al, published in the *Archives of Physical Medicine and Rehabilitation* in 2005.



- continued on page 2

## Thoracic Manipulation for Impingement Syndrome continued ...

### Reference

Boyles RE, Ritland BM, Miracle BM, Barclay DM, Faul MS, Moore JH, Koppenhaver SL, Wainner RS. The short-term effects of thoracic spine thrust manipulation on patients with shoulder impingement syndrome. *Man Ther* (2008), doi:10.1016/j.math.2008.94.005.

The results showed a significant reduction in pain ratings and functional disability along with a mild tendency towards the patient's perception of improvement. While these findings were statistically significant the changes were not beyond the minimal detectable change values or within the confidence intervals for the amount of improvement. Nonetheless, the positive findings are encouraging given the follow-up was only 48 hours after treatment in a population of subjects that had relatively mild symptoms.

The authors were quick to remind the reader that this study was only exploratory in nature and that no "cause and effect" relationship could be implied until random controlled trials are studied to evaluate a difference in subjects that do not get these types of therapeutic interventions.

I thought this was a unique study that opens the door for more investigation on the adjunctive value of thoracic thrust manipulations in the management of shoulder pathology. It certainly seems to support the theory that thoracic posture influences scapular mechanics and that thrust techniques may be employed to reset afferent input prior to introducing biomechanically correct therapeutic motion. I look forward to follow-up studies that will establish clinical prediction rules that may identify the unique patient who will benefit most from this type of intervention.



## Question of the Month – Fall Risk Assessment



*What test do you use to screen for fall risk in your Medicare patients?*

*J.S., PT, - TX*

As we all know the risk for falling is heightened in our geriatric patients and the morbidity statistics following these unfortunate incidents can be quite alarming. In fact, one of the optional measures of quality care for Medicare patients to qualify for a 1.5% bonus payment is to screen for the risk of future falls. This can be as simple as asking the patient during the initial evaluation if they've fallen in the past year. A patient is considered at risk if they report they've had two or more falls or one fall that resulted in an injury in the past year.

To specifically answer your question, there are a number of well researched clinical balance examination tools which require minimal equipment and time. Probably the four most common are the Berg Balance Measure, the Tinetti Assessment Tool, the Timed Up and Go (TUG) test, and the Activities-Specific Balance Confidence Scale (ABC).

The Berg Balance Measure is a reliable and valid performance-oriented assessment that evaluates the client's ability to perform 14 unique tasks and scored on an ordinal scale ranging from 0-4. The highest attainable score is 56 points indicating independence on all 14 tasks. Scores below 45 warrant concern regarding an elevated risk for falls.

Similarly, the Tinetti Assessment tool utilizes 9 balancing tasks and 7 descriptors of gait tasks to predict a patient's fall risk. The scoring is done on a 3 point ordinal scale ranging from 0-2 with scores of 2 representing independence for each task. The maximum score for the gait section is 12 points and 16 points for the balance section. Total scores of less than 19 indicate a high risk for falls with scores in the 19-24 range predicting a moderate risk.

The TUG test is a very simple and reliable test of basic functional mobility for geriatric patients. The test simply measures the time it takes a patient to stand from a chair, walk 10', and return to sit in the chair. It also has

been correlated to higher risk for falls if the task takes more than 10 seconds. Patients who take more than 20 seconds are generally independent in ADLs but those taking longer than 30 seconds will typically require assistive devices for gait and stance stability.

Finally, the ABC Scale measures the "fear" of falling. This 16-item self report questionnaire asks a patient to judge their confidence in performing a variety of everyday activities. The scale is scored from 0-100% based on the average ratings and those scoring under 50 are obviously apprehensive about their function and restricted in their physical abilities

If the best treatment for a fall is preventing its occurrence you may want to utilize these tests to identify those at risk so as to proactively address the impairments that are contributing to this functional limitation.

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



**“Featured Internet Link”**

**e EPOCRATES®**  
[www.epocrates.com](http://www.epocrates.com)

How often does a patient tell you about a medication they are taking and you’re not sure what that drug is or does? I have found the Epocrates Online web site to be a **free**, fast and effective way to find continually updated information on hundreds of drugs and diagnoses. The site was jointly developed by Epocrates - a leading provider of clinical information products, and the BMJ Group - a global authority in evidence-based medical practice.

Epocrates Online organizes practical, peer-reviewed content with a unique patient-centered approach that provides continually updated, integrated drug and disease information with easy-to-use expandable menus that let you go from concise to comprehensive. You can look up a monograph directly, or find specific information through an open-text search. Additionally, you can access printer friendly handouts in both English and Spanish that address common concerns such as how to take the medication, possible side effects, and what the medication looks like.

One of the more powerful tools is the “MultiCheck” feature that enables you to check for interactions among as many as 50 drugs at a time. Potential interactions are organized by clinical category to help you determine the appropriate action. For a specific medicine you can print an entire monograph that includes dosing, actions, contraindications/precautions, drug interactions and adverse reactions, and black box warnings. I would highly recommend you bookmark this site for quick and easy access for the next time you need to evaluate a patient’s medication history in context with their presentation.



**Carpal Tunnel Syndrome Clinical Prediction Rule** continued -

In this study the results of standard clinical tests and responses to common clinical interview questions were compared to the results of the electrodiagnostic findings. A total of 21 different tests were evaluated for their diagnostic value. A combination of four tests in additions to the patient’s age was found to be the most predictive of the pathology and is listed below. If all five criteria were met the patient was approximately 18 times more likely to have the target disorder of CTS. Any positive likelihood ratio over 10 is considered highly significant and represents a large shift in the probability of the existence of the condition.

**The Clinical Prediction Rule for Carpal Tunnel Syndrome**

1. Positive response to the question “Does shaking hands provide symptom relief?” (+ “flick” sign)
  2. Wrist ratio index\* > .67
  3. Score on the Symptom Severity Scale\*\* (SSS) > 1.9
  4. Diminished sensation in the median sensory distribution (thumb area)
  5. Older than 45 years of age
- \* the wrist ratio index is an indicator of the carpal tunnel volume. It is calculated by dividing the greatest anterior-posterior wrist diameter by the greatest medial-lateral diameter. The higher the value the “fatter” or “thicker” the wrist.
- \*\* the Symptom Severity Scale is a self-report measure consisting of 11 statement items related to 6 critical domains relevant to CTS. The higher the SSS value the more severe the symptoms.

<b>Clinical Prediction Rule for the Diagnosis of Carpal Tunnel Syndrome</b>			
<b>Number of + Tests</b>	<b>Sensitivity (95% CI)</b>	<b>Specificity (95% CI)</b>	<b>+ Likelihood Ratio (95% CI)</b>
<b>≥ 2 + tests</b>	.98 (.14-1.00)	.14 (.23-.93)	<b>1.1</b> (1.0-1.3)
<b>≥ 3 + tests</b>	.98 (.14-1.00)	.54 (.40-.67)	<b>2.1</b> (1.6-2.8)
<b>≥ 4 + tests</b>	.77 (.61-.93)	.83 (.73-.93)	<b>4.6</b> (2.5-8.7)
<b>All 5 tests +</b>	.18 (.03-.31)	.99 (.97-1.0)	<b>18.3</b> (1.0-328.3)

It is important to note that this study just represents the first step in developing a clinical prediction rule. Hopefully, validation and impact follow-up studies will be forthcoming from these authors based on their exciting initial results.

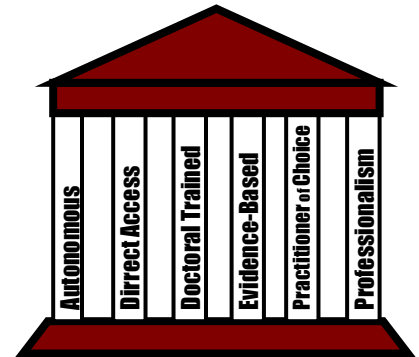
**Reference:**

Wainner RS, Fritz JM, Irrgang JJ, Delitto A, Allsion S, Boninger ML. Development of a Clinical Prediction Rule for the Diagnosis of Carpal Tunnel Syndrome. 2005. *Arch Phys Med Rehab* 86(4):609-618.



American Physical Therapy Association

**The 6 Pillars of Vision 2020**



What are you doing to support the goals of our national association’s 2020 vision? It is the responsibility of each of us to practice in a manner consistent with this vision. Here is a brief explanation of each pillar’s intent.

**Autonomous Practice** – accept the responsibility to work in an independent, self-determined, collaborative, and collegial manner with physicians and other health care providers.

**Direct Access** – establish the legal & reimbursable right as a consumer entry point into the healthcare system for patients with movement related dysfunctions.

**Doctors of Physical Therapy** – pursue entry level and post-professional education that typifies a doctorally trained practitioner.

**Evidence-Based Practice** – integrate current evidence into our clinical decision making to enhance outcomes and reduce unwarranted variation in practice.

**Practitioner s of Choice** – become recognized as the preferred providers for impairments, functional limitations, & disabilities related to movement, function, and health

**Professionalism** – adhere to standards of practice and ethical principles to achieve optimal patient outcomes.

For a complete definition of the elements of the 2020 Vision along the operation definition of each of the key pillars - visit the APTA’s home page at [www.apta.org](http://www.apta.org) and click on the Vision 2020 logo.





Previous issues are archived at  
[www.continuing-ed.cc/newsletter.htm](http://www.continuing-ed.cc/newsletter.htm)

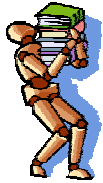


## continuing ED

1901 Pintail Parkway  
 Euless, TX 76039

Phone: 817-488-2061  
 Fax: 817-684-7201  
 Email: [mulliganpt@tx.rr.com](mailto:mulliganpt@tx.rr.com)  
[www.continuing-ed.cc](http://www.continuing-ed.cc)

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](mailto:mulliganpt@tx.rr.com)



The best thing about teaching is the opportunity to learn for the second time



continuing ED



Happy Thanksgiving

### Abdominal Hollowing Exercise

### Rehabilitation Exercise Technique

One of the core elements to a lumbar exercise program is to train the transversus abdominis to arthrokinematically protect the spine during movement. This stability can prevent abnormal stress on damaged spinal tissues. There are a number of common errors that a patient will make when learning how to recruit these deep stabilizers that should be monitored for and corrected. Here are some of the keys to abdominal bracing psychomotor training:



1. Monitor for motion in shoulders, pelvis, or rib cage – these should be minimized
2. The lower abdominals "bulge" – indicating a recruitment of the internal obliques – the stomach should flatten while the spine remains still
3. The rib cage depresses – indicating a recruitment of the external obliques; remind the patient that the rib cage shouldn't move (expand or depress)
4. The patient performs a posterior pelvic tilt – remind the patient the spine should remain still
5. The patient holds their breath – it sometimes helps to tell them to keep their mouth open or their tongue on the roof of the mouth
6. You note increased tension in the superficial neck muscles or tension in the hip muscles (indicating the patient's attempt to do a sit-up)
7. Check to see if the feet are trying to press into the floor when performing exercises in supine or kneeling

Proper form requires normal breathing while developing tension in the lower abdomen. I have my patients palpate the contraction just below and medial to the ASIS. I also like the verbal cues of - "Make yourself self skinny", "narrow your waist line", "stop urine flow mid stream", or "draw the belly button down". Finally, I do not allow the patient to progress to more difficult levels of peripheral movement until they can consistently and painlessly hold this isometric position for at least 10 seconds x 10 reps.



### Featured Home Study Program Scapular Significance

An impairment often associated with subacromial impingement syndrome is tightness in the pectoralis minor. It is postulated that flexibility limitations in this muscle may restrict the ability of the scapula to posteriorly tilt during shoulder elevation. The most traditional method of evaluating pec minor length is to measure the linear distance from the plinth to the posterior edge of the acromion in a supine position. Asymmetries of greater than 1 cm or more than a 3-6 cm distance is considered to be a "tight" pec minor. While there is limited evidence on the accuracy and diagnostic value of this measure identifying those with impingement the measure has been shown to be highly reliable (Lewis JS, et al, *BMC Musculoskeletal Disord*, 2007). An alternative measurement technique was developed by Borstad, et al (Phys Ther, 2006) called the scapular index. While the reliability of this measurement was not evaluated it did correlate pretty well in identifying impingement subjects with a short vs. long pec minor.



Scapula Index measurement. Top: sternal notch to coracoid process distance. Bottom: posterolateral angle of scapula to thoracic spine distance.

#### Home Studies Now Available Study and learn at your own pace at home!

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
<b>Scapular Significance: Ortho Perspective</b>	<b>.2 CEUs</b>
Proximal Humerus Fracture Rehab	.2 CEUs
Subacromial Impingement Syndrome	.2 CEUs
Examination-Treatment of Hand/Wrist	.3 CEUs
Ethics and Professional Responsibility	.2 CEUs

Convenient access to web based content relevant to your practice needs. Only \$12.50 per contact hour to meet your relicensure requirements.

If you need a good review of on the scapula's contribution and influence on shoulder function you may be interested in our home study titled "Scapular Significance". 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.

[www.continuing-ed.cc](http://www.continuing-ed.cc)