



Therapy Solutions News

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Thank you for your continued support!



Fig. 1 The Spurling Test (Foraminal Compression Test): Cervical rotation/lateral flexion/ extension. This test is positive in case this position reproduces patient's UE symptoms (axial compression can be added in case of doubt).



Fig. 2 The neck distraction test. This test is positive in case cervical distraction relieves patient's UE symptoms



Fig 3 Active range of motion cervical rotation towards involved side is < 60 degrees.

An optimal Test Item Cluster for the diagnosis of Cervical Radiculopathy

Robert S Wainner et al., "Reliability and Diagnostic Accuracy of the Clinical Examination and Patient Self-report Measures for Cervical Radiculopathy," *Spine* 28, no. 1 (January 1, 2003): 52-62, doi:10.1097/01.BRS.0000038873.01855.50.

Clinical Prediction Rules (CPR's) are becoming increasingly important in Medicine and Physical Therapy. They can assist us in matching patients to appropriate treatment interventions, inform us about prognosis, and help us make more accurate diagnoses (1). CPR's are not meant to replace clinical judgment, but they help us make decisions based on validated evidence. Some examples of diagnostic CPR's in physical therapy include CPR for carpal tunnel syndrome (2), CPR for hip OA (3) and CPR for cervical myelopathy (4). We now also have treatment CPR's such as CPR for lumbar spinal manipulation (5), CPR for thoracic manipulation for patients with neck pain (6), and CPR for cervical traction (7). Developing CPR's goes through 3 distinct phases: a derivation phase (identifying factors with predictive value), a validation phase (randomized clinical trial to reproduce the rule in a different patient population), and an impact analysis (study if the rule changes clinical behavior and improves patient's outcome/ reduces costs) (1).

This newsletter represents an example of a diagnostic CPR that is in the derivation phase of research. Cervical radiculopathy is most often diagnosed using diagnostic imaging and electro-physiologic studies. EMG and Nerve conduction studies (NCS) have a moderate sensitivity (Sn) and a high specificity (Sp) and are considered the golden standard for diagnosing cervical radiculopathy (8). Since these tests are rather expensive, time consuming, and uncomfortable to the patient, Wainner et al 2003 examined the reliability and accuracy of a Test Item Cluster that can be used in the clinic for the diagnosis of cervical radiculopathy. They performed a blinded prospective diagnostic test study. 82 patients that presented with signs and symptoms of cervical radiculopathy underwent EMG and NCS followed by a standardized examination consisting of 34 clinical tests performed by physical therapists who were blinded to the diagnosis. A test item cluster was derived that was more useful in identifying cervical radiculopathy than any single test item. These are: the Spurling Test (fig. 1), the Neck Distraction Test (fig 2), cervical rotation towards the involved side < 60 degrees (fig.3), and Upper Limb Tension Test (SLR of the upper extremity) (fig. 4 a,b &c). Two positive tests resulted in a Post Test Probability of 21% (95 CI); three positive tests had a Post Test Probability of 65% (95 CI) and four positive tests had a Post Test Probability of 90% (95 CI). In addition, 2 questions during the anamnesis had acceptable positive likelihood ratio's (LR+): "Where are your symptoms most bothersome?" and "Do your symptoms improve with moving your neck?"

Surprisingly none of the classic diagnostic signs for cervical radiculopathy such as loss of muscle stretch reflexes or loss of sensation and motor weakness are included in this Test Item Cluster. The authors attribute this to the fact that none of the patients in this study were classified under the severe category of EMG/ NCS findings. The advantage of the Test Item Cluster derived from this study is that it allows us to diagnose even mild to moderate cervical radiculopathy. In the next phase of research this CPR has yet to be validated by means of a randomized clinical trial.

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Fig. 4 a: Upper Limb Tension Test (ULTT) first part: patient is pre-positioned in cervical side bending away from painful side. The shoulder is in abduction, external rotation and extension; the forearm is supinated. Patient's shoulder girdle is stabilized with therapist hand.



Fig 4 b: ULTT second part: Elbow is extended and wrist is extended. Patient's symptoms reproduced?



Fig. 4 c: ULTT third part: Patient actively side bends his/her neck towards the painful side: patient's symptoms relieved? The ULTT is positive in case patient's pain is reproduced during part A and/or part B and relieved during part C of the test.

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- (2) Robert S Wainner et al., "Development of a Clinical Prediction Rule for the Diagnosis of Carpal Tunnel Syndrome," *Archives of Physical Medicine and Rehabilitation* 86, no. 4 (April 2005): 609-618, doi:10.1016/j.apmr.2004.11.008.
- (3) Thomas G. Sutlive, "Development of a Clinical Prediction Rule for Diagnosing Hip Osteoarthritis in Individuals With Unilateral Hip Pain," *Journal of Orthopaedic and Sports Physical Therapy* (September 2008), doi:10.2519/jospt.2008.2753.
- (4) Chad Cook et al., "Clustered Clinical Findings for Diagnosis of Cervical Spine Myelopathy," *The Journal of Manual & Manipulative Therapy* 18, no. 4 (December 2010): 175-180, doi:10.1179/106698110X12804993427045.
- (5) A Clinical Prediction Rule to Identify Patients with Low Back Pain Most Likely to Benefit from Spinal Manipulation: a Validation Study," *Annals of Internal Medicine* 141, no. 12 (December 21, 2004): 920-928.
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- (7) Congcong Cai, Guan Ming, and Lih Yen Ng, "Development of a Clinical Prediction Rule to Identify Patients with Neck Pain Who Are Likely to Benefit from Home-based Mechanical Cervical Traction," *European Spine Journal*: 20, no. 6 (June 2011): 912-922, doi:10.1007/s00586-010-1673-6.
- (8) American Association of Electrodiagnostic Medicine, American Academy of Physical Medicine, Rehabilitation. Practice parameter for needle electromyographic evaluation of patients with suspected cervical radiculopathy: Summary statement. *Muscle Nerve* 1999;22(Supp 18):S209-11.