

The Arizona Quarterly Spine *The "Best of" Edition!*



The "Best of" Edition



A Note from Shane

As a physical therapist who specializes in spine disorders, it's important for me to review the evidence based spine research and provide your patients with the most recent spine assessment and rehabilitation strategies. I would like to share with you this research through ***The Arizona Quarterly Spine!***

Have you ever wondered...

- What are the **best** clinical tests for diagnosing cervical radiculopathy?
- What are the **best** clinical tests to diagnose a SI Joint Dysfunction?
- What is the **best** and safest sit-up to strengthen the core?

Given the comprehensive list of physical examination tests available, the purpose of this newsletter is to provide you the best available evidence based physical examination tests for these common spine orthopedic conditions.

What are the best clinical tests for diagnosing cervical radiculopathy?

Wainner et al recently examined various clinical tests, alone and in combination, for diagnosing cervical radiculopathy. The upper limb tension test described by Elvey was the single best screening test (sensitivity=97%). A negative upper limb tension test, thus, essentially rules out the diagnosis of cervical radiculopathy. However, the best method for ruling in the condition came from a test item cluster that consists of a series of clinical findings. The test item cluster consists of the following 4 tests: positive Spurling test (Figure 1), positive distraction test (Figure 2), positive upper limb tension test (Figure 3), and the presence of less than 60 degrees of cervical rotation ROM to the involved side. When 3 of these findings are found, radiculopathy should be strongly suspected (specificity=94%). If all 4 findings are

present, you can be virtually certain the patient in fact has a cervical radiculopathy (specificity=99%).

In this issue

- **The best clinical tests for diagnosing cervical radiculopathy**
- **The best clinical tests for diagnosing a SI joint dysfunction**
- **What is the safest sit-up to strengthen the core**

What is sensitivity? Sensitivity can be defined as the ability of a test to obtain a "positive" result when the condition the test is testing for is really present. In other words, it's the ability of a test to produce a true positive result when the patient being tested actually has the condition.

What is specificity? Specificity is the ability of a test to obtain a negative result when the condition the clinician is testing for is truly absent. Specificity is represented by the proportion of individuals who test negative for the condition out of all those who do not have the condition.

Summer 2010

What are the best clinical tests for diagnosing cervical radiculopathy? (cont.)



Figure 1: Spurling test

1. The patient assumes a neutral cervical posture while in sitting.
2. The patient is instructed to side flex their head to the side of their referred symptoms. If radicular pain is present, the test is positive.
3. (If no symptoms up until this point). The examiner then applies a combined compression and side flexion force in the direction of side flexion. If radicular pain is present, the test is positive.

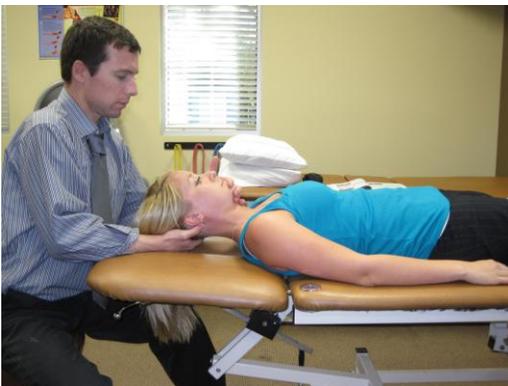


Figure 2: Distraction test

1. The patient assumes a supine position.
2. A traction force is applied.
3. A positive test is reduction of symptoms during traction.

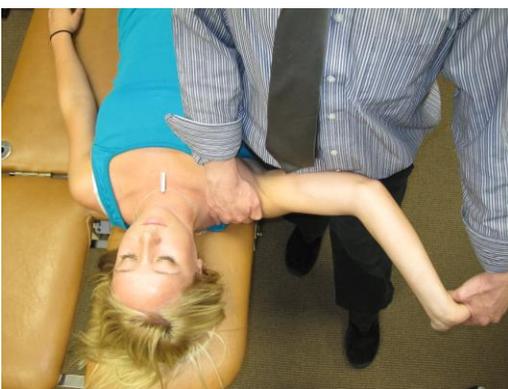


Figure 3: Upper Limb Tension Test

1. The patient assumes a supine position.
2. The examiner blocks the shoulder girdle.
3. If no reproduction of symptoms has occurred, the GH joint is abducted to 110 degrees. Symptoms are reassessed.
4. If no reproduction of symptoms has occurred, the forearm is supinated completely and the wrist and fingers extended. Symptoms are again assessed.
5. If no reproduction of symptoms has occurred, elbow extension is applied. Symptoms are again assessed.
6. If radicular pain is present, the test is positive.

What are the best clinical tests for diagnosing a SI joint dysfunction?

Laslett examined the reliability of some of the SI joint provocation tests and found 5 tests show good interexaminer reliability. These include distraction (0.69 Kappa), compression (0.77 Kappa), thigh thrust (0.82 Kappa), and Gaenslen's (0.79 and 0.64 Kappa).

In 2002, Kokmeyer et al studied the reliability of a combination of SI joint provocation tests. The threshold for a positive selection was 3 out of 5 tests (Kappa 0.70).



Distraction: SIJ Pain Provocation Test



Compression: SIJ Pain Provocation Test



Thigh Thrust: SIJ Pain Provocation Test



Gaenslen's: SIJ Pain Provocation Test

What is reliability? In reference to physical examination tests, reliability is used to capture agreement, and is divided into intrarater reliability and interrater reliability. Intrarater reliability examines whether the same person can repeat the test consistently whereas interrater reliability examines whether two or more people can repeat the test.

What is a kappa value? The statistic used to measure reliability is called a kappa. Kappa measures the amount of agreement.

Kappa value	Explanation
0	Poor agreement
.01	Slight agreement
.21 to .40	Fair agreement
.41 to .60	Moderate agreement
.61 to .80	Substantial agreement
.81 to .99	Almost perfect agreement

What is the best and safest sit-up?

Abdominal exercises are prescribed for both the prevention and treatment of low back injury. However, these exercises sometimes appear to have hazardous effects on the lumbar spine. Axler and McGill performed an analysis of 12 different abdominal exercises (Figure 1). They used EMG to quantify the challenge to the abdominal muscles (rectus abdominus, external oblique, and internal oblique). For a given exercise, the maximum abdominal muscle EMG value was divided by the maximum compression value, resulting in an abdominal challenge versus spinal compression cost index. In general, the partial curl-ups generated the highest muscle challenge-to-spine cost indices. No single exercise was found that optimally trained all the abdominal muscles while at the same time incurring minimal intervertebral joint loads. It was concluded that a variety of selected abdominal exercises are required to sufficiently challenge all the abdominal muscles and that these exercises will differ to best meet the rehabilitative objectives of the individuals.

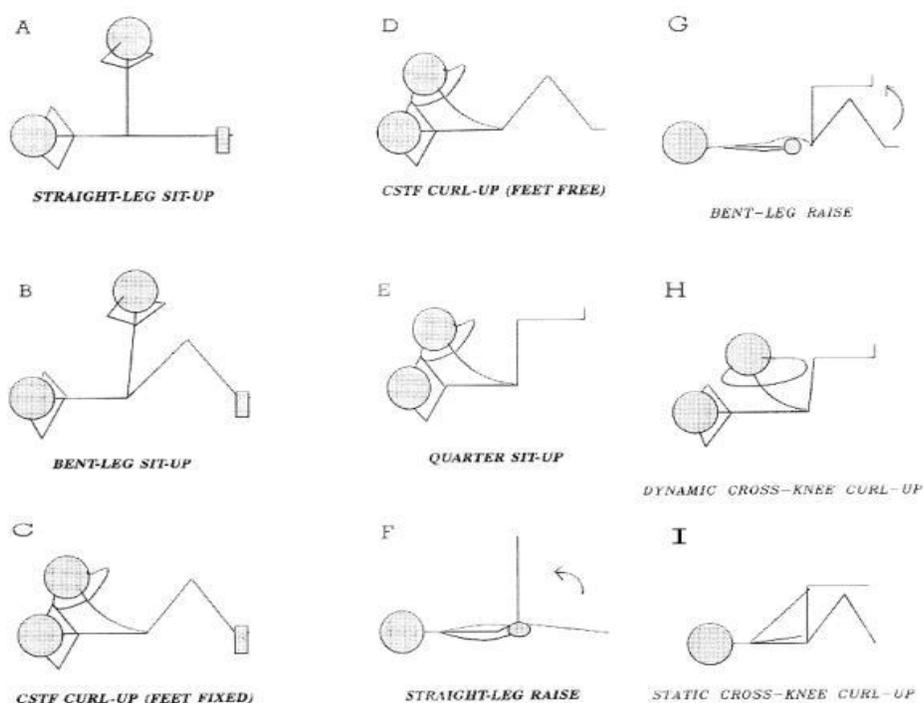


Figure 1: Diagrams of abdominal exercises

Recommended Sit-Ups*

High abdominal muscle challenge to spinal compression ratio	Curl-up: feet anchored; Curl-up: feet free; dynamic cross-knee curl up
Higher muscle challenge, higher spinal compression	Straight-leg sit-up; bent leg sit-up
Lower muscle challenge, lower spinal compression	Curl-up: feet anchored; curl-up:feet free
Exercise emphasizing oblique muscles	Isometric side support
Exercise emphasizing rectus abdominus	Quarter sit-up
Sit-ups that are not recommended	Supine straight-leg raise; supine bent-leg raise; static cross-knee curl-up; hanging bent-leg raise

*A variety of sit-ups are necessary to work all abdominal muscles. Healthy, strong individuals can generally tolerate higher muscle challenge, higher spinal compression sit-ups. Patients with pain or anatomic problems may benefit from lower compression, lower muscle challenge exercises—though even these can still produce high levels of compression at L4-5.



Using the Internet

SpineScottsdale is now using the internet to connect with the community. We are on Facebook, Twitter, Posterous, and Yelp! You can learn more about these internet sites below...



Facebook: Are you a fan?

Perhaps you have heard of this social networking site that is gaining popularity...FACEBOOK. Well, SpineScottsdale has decided to be a part of the trend. You can find a link at our website, www.spinescottsdale.com, to become a fan. You can post comments, view pictures, read articles, and tell your friends.



Twitter: Providing your patients tips on how to keep your spine healthy

Every day, millions of people use Twitter to create, discover and share ideas with others. Now, SpineScottsdale is turning to Twitter as an effective way to provide your patients and members of the community tips on how to keep your spine healthy. You can find a link to our Twitter page at: www.spinescottsdale.com



Posterous: Evidence-based blog designed for health care professionals

Too busy to keep up with all the spine related research? I will be posting a weekly blog discussing the most recent evidence-based material on spine related issues. You can view this blog by going to: www.spinescottsdale.posterous.com



Yelp: The purpose of YELP is to connect people with great local businesses.

1. Yelp was founded in 2004 to help people find great local businesses.
2. As of May 2010, more than 32 million people visited Yelp in the past 30 days.
3. Yelpers have written over 11 million local reviews.
4. Your patients will be able to review SpineScottsdale Physical Therapy at www.yelp.com



Moving in the Right Direction

What your patients saying?

The following comments were provided on our Patient Satisfaction Survey:

“I came to SpineScottsdale unable to play baseball because of my back pain. I am playing baseball better than ever with no pain at all. Shane is full of knowledge and is extremely helpful”

-Jake

“The warmth, professionalism, and care I received at SpineScottsdale was beyond my expectations.”

-Karen

“I’ve been struggling with back pain for more than 10 years, and this the first treatment that has been successful. Shane is very knowledgeable, personable, and professional. Thank you Shane.”

-Andrew

“Shane is fantastic. Not only did he correct my immediate problem of lower back pain, he has taught me how to be proactive in maintaining “back health”. I highly recommend him!”

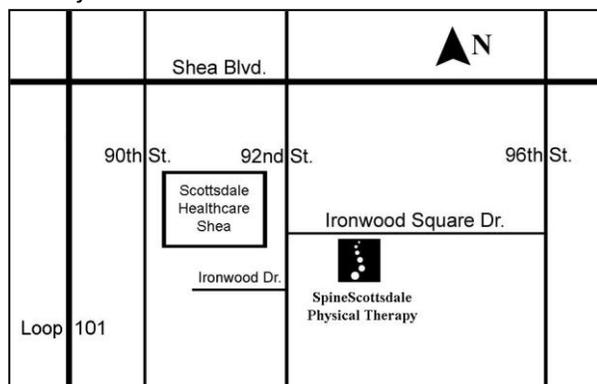
-Denise

“My experience at SpineScottsdale has been excellent and the first physical therapy that has made a difference! Shane is knowledgeable, professional, and caring.”

-Jo

“After years of lower back pain, I was on my way of being completely pain free after the first two sessions! I now have the tools to use myself at home to remain pain free! I’m able to once again do things I love to do! Many, many thanks to Shane!

-Marijean



10133 N. 92nd St., Suite 101
 Scottsdale, Arizona 85258
 Phone: 480-584-3334
 Fax: 480-272-9369
 Email: shane@spinescottsdale.com

Shane Sullivan
 PT, DPT, CERT. MDT, OCS, ATC, CSCS



Licensed Physical Therapist
 Doctor of Physical Therapy
 Certified in Mechanical Diagnosis and Therapy
 Board Certified Orthopedic Clinical Specialist
 Certified Athletic Trainer
 Certified Strength and Conditioning Specialist