

How Accurate Is That Test?

By Whitney Lowe, LMT

Physical assessment is considered one of the most accurate ways to assess function of the locomotor tissues of the body. While we can often gain valuable information about structural problems through high-tech diagnostic procedures like X-ray or MRI, these procedures tell us very little about the function of the tissues involved in creating and limiting movement.

Some of the most detailed information practitioners gather from physical examination comes from a group of procedures called special tests. This group includes methods such as active range of motion; passive range of motion; manual resistive tests; and special regional orthopedic tests. The special regional orthopedic test is a particularly important element of the assessment process. This test is designed to give information about a particular injury or condition.

A practitioner's success in identifying a client's problem is often directly related to his/her ability to perform good assessment procedures such as special regional orthopedic tests. The practitioner must be able to perform the test correctly. Other factors also come into play in determining how effective that assessment procedure is, and consequently how effective the practitioner is at identifying the client's problem.

Accuracy in special regional orthopedic tests is affected by the relationship of two related concepts - **sensitivity and specificity** of the test. **Sensitivity** is the percentage of subjects with the condition who also show a positive result on the test. It determines how "sensitive" (accurate) the test is at determining the condition when it is present. **Specificity** is the percentage of subjects without the condition who show a negative result on the test. It determines whether the test can show if someone doesn't have the condition.

Take as example a sample of people in an experiment: some with carpal tunnel syndrome, and some without. If a special regional orthopedic test like the Phalen's test is performed, and everyone tests positive for carpal tunnel syndrome, it means that everyone in this group who had carpal tunnel syndrome got a

positive test. The sensitivity of the test in this instance is considered high. However, all the people who don't have carpal tunnel syndrome also tested positive; there were no negative tests, even for people without the condition. Therefore, this test's specificity is low.

Certain commonly utilized special orthopedic tests may not have a high degree of sensitivity or specificity, yet are frequently used as guidelines for evaluating the presence of a particular condition. A good example of this is Adson's maneuver, used for identifying thoracic outlet syndrome. To perform Adson's maneuver, the practitioner finds the client's radial pulse at the wrist, then brings the client's arm back into extension and lateral rotation. The client is instructed to look over his/her shoulder toward the affected side and take in a deep breath. If the intensity of the pulse diminishes, the client is suggested to have entrapment of the brachial plexus and subclavian artery by the anterior and middle scalene muscles -- commonly referred to as thoracic outlet syndrome. The problem with this procedure is that a large number of people who do not have any symptoms test positive (diminishing radial pulse) when this test is performed. Thus, this test does not have a high degree of specificity.

The most accurate special regional orthopedic tests have high degrees of specificity and sensitivity; however, this is not always easy to demonstrate. Many studies attempt to evaluate the effectiveness of different assessment procedures, and to illustrate the strengths and weaknesses of each. The more you know about the clinical accuracy of these procedures, the more capable you are of identifying your client's primary complaint.

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