

Orthopedic and Neurological Testing as a Practice-Building Tool?

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Editor's note: The premise of this article, using orthopedic and neurological testing as a practice builder, is intended to be humorous. As the author states toward the end of the article, "regardless of which tests are used, use should be based on patient need and the doctor's clinical judgment. Orthopedic tests aren't really practice-building tools."

A great exam can make a good first impression with new patients. Patients are impressed with doctors who are thorough and detail oriented. They feel like the doctor cares and will get to the bottom of their problem. An accurate exam means accurate diagnosis. Accurate diagnosis means accurate treatment. Accurate treatment increases the odds of a good prognosis.

While the overall examination process is dependent upon the patient's need, there are a few orthopedic and neurological tests that, if worked into the exam process, will enhance the doctor's reputation, guarantee patient compliance and stimulate referrals.

Spurling's Test

The first of these tests is Spurling's test for [cervical radiculopathy](#). The test is performed with the patient seated. The examiner applies axial compression to the head with the cervical spine laterally flexed first to the asymptomatic side, then to the symptomatic side. The purpose, in theory, is to reproduce radicular arm pain by reducing the size of the intervertebral foramen on the side of lateral bending.

If pain is reproduced on the symptomatic side, the test is positive. If not, the examiner moves to the second portion of the maneuver before making the final determination of whether the test is positive or negative.

The patient's head and neck are returned to the neutral position, and the examiner strikes the patient on top of the head with the bottom of their closed fist. If pain is reproduced in the symptomatic arm, then the test is positive for cervical radiculopathy. If pain is still not produced, then the test is negative. This test provides a real "Wow!" moment for the patient and leaves a lasting impression.

One word of caution here: The examiner must be careful, as false negatives have been reported in patients who can take a punch.

The Kidney Punch

The next test is the kidney punch. The test can be performed with the patient standing or seated. Since the patient has already been seated for Spurling's, it is a good idea to move immediately to the kidney punch for convenience and to avoid losing the momentum you are building toward that good first impression.

The kidney punch is a general check for [kidney pathology](#). It identifies soreness in a kidney, but not the actual pathology causing the soreness. The test is performed by punching the patient in the flank directly over each kidney with the bottom of your closed fist. Soreness / pain with punching is a positive result; no pain with punching is a negative result. As with Spurling's, the examiner must be aware of false negatives in tougher patients.

The Snuff Test

Lewin's snuff test is next. This test is intended to detect space-occupying lesions. Another seated test, it is performed by having the patient snort a generous quantity of pepper up their nose to induce a significant sneeze. Sneezing increases intrathecal and intradiscal pressure. In the presence of a space-occupying lesion in the head or spine (which could be a tumor or disc issue), the patient may experience head, spinal or extremity pain. Any or all of these would indicate a positive result. A negative result is the absence of pain. The test works best with fresh ground pepper.

Valsalva's Maneuver

Another test for space-occupying lesions is Valsalva's maneuver. This test can be performed in any position; however, you will want to stick with the seated position in order to keep the number of position changes to a minimum. This cuts down on the wear and tear the patient experiences during testing. Remember, it is all about patient comfort.

Valsalva's is performed by having the patient hold their breath and bear down. This is basically holding pressure against a closed glottis. The positive result is essentially the same as that for Lewin's snuff test: head, spinal and/or extremity pain. No pain is a negative result.

This test has a small side effect the examiner should be aware of. Straining and holding pressure against a closed glottis can also invoke a vasovagal response, causing the patient to pass out. While the side effect is inconvenient for the examiner, it can provide additional information about the patient. It is difficult to tell if the patient is putting their best effort into the testing process unless side effects occur. The patient's commitment to the testing process can be a good indicator of overall patient compliance.

Naffziger's Test

After the smelling salts, the exam moves quickly to a final test for space-occupying lesions, Naffziger's test. Here, the examiner stands behind the seated patient and applies pressure to the jugular veins for 40 seconds. This prevents blood from exiting the head while the heart continues to pump blood into the head. The result is increased vascular and intracranial pressure. At 35 seconds (if the examiner loses track of time, 35 seconds is usually when the patient's head is as red as a beet and their eyes are bugging out), the examiner instructs the patient to cough, giving a final boost to the pressure in the head. As with Lewin's snuff test and Valsalva's maneuver, head, spinal and/or extremity pain is a positive result. No pain in these areas is a negative result.

A word of warning: Naffziger's can be inconvenient for the examiner; like Valsalva's, the patient may pass out. This effect results either from the pressure that builds in the head or the examiner accidentally occluding the carotid arteries with or instead of the jugular veins, cutting off the blood supply to the patient's brain.

Side effects aside, Naffziger's is a show stopper! By this point the patient cannot wait for the exam to be over and get out of the office. Dizzy with excitement, the patient is eager to tell others about their experience - but referrals will have to wait. The exam isn't finished yet. There are two more

highlights.

Foot Drop Test

Once the patient has their sea legs, we are ready to stand them up for the foot drop test. This test is similar to a childhood prank we are all familiar with: pulling a chair out from under someone just as they sit down. I'm sure you have been on the giving or receiving end of this prank a time or two.

When a patient with drop foot is suspected of malingering, the doctor sneaks up on the patient from behind and suddenly, without warning, jerks the patient backward by the shoulders. If the patient has true drop foot from L4 nerve root, [tibial nerve](#) or tibialis anterior pathology, the affected foot will stay on the floor when the rest of the patient's body suddenly moves backward. The forefoot and toes of the unaffected foot should leave the floor. This is a negative test; the patient really has drop foot. A positive test occurs when the forefoot and toes of both feet leave the ground. This indicates malingering.

A small complication can occur here. When the examiner is much smaller than the patient and is unable to catch the larger patient after pulling them backward, the examiner may be injured. This is definitely a hazard for the examiner. An alternate testing position for the examiner is suggested for these situations. The patient should be positioned with their back 2-3 feet from a wall. The examiner, now in front of the patient, can suddenly shove the patient backward into the wall. The examiner must remember to keep their eyes on the patient's feet in order to interpret the test results.

Hoppenfeld's Test

The final test in our examination is Hoppenfeld's test for motor function of the S1 and S2 nerve roots, and the strength of the gastrocnemius and soleus muscles. The test involves hopping up and down on one foot a few times. If the patient can propel themselves into the air and land on their toes a few times on each foot, motor function and strength are normal, and the test is negative. If the patient cannot jump or lands flatfooted, then the test is positive for motor dysfunction.

One word of caution here: False positives are a concern with this test. For some reason this test is difficult for patients with acute gout, sprained ankles, bad knees, hip or knee replacements, poor balance, poor coordination, disorders of the cerebellum, pars fractures, bad sacroiliac joints, prosthetic legs, advanced age, advanced pregnancy, lack of proprioception, [advanced diabetes](#), or any one of 30-40 other conditions. The examiner must be conscious of this when interpreting and recording results.

Now that we have punched, choked, revived, startled, shoved and exercised the patient (oh, I forgot the pepper up the nose), I think we have made a good and lasting impression. The patient will tell everyone they have never had an examination like this one. News of a progress exam in four weeks usually leaves the patient speechless. Patient compliance is set and referrals are on the way.

The Disclaimer and Some Better Options

Surely you realize I am kidding. While these are examinations in literature, they are *not* our best choices. There are plenty of tests for cervical radicular problems making the use of Spurling's test only necessary as a last resort. MR and nerve conduction studies are also available and preferable to Spurling's.

The kidney punch is easily replaced with the heel drop test: The patient rises up on their toes and

suddenly drops down on the heels, giving themselves a "jar." This shakes the kidneys; pain in the flank (kidney) is a positive test. This also tests the motor function of the S1 and S2 nerve roots and strength of the gastrocnemius and soleus muscles. If the examiner instructs the patient to perform several toe raises with both feet and drop onto the heels with the last rep, this will replace the Hoppenfeld and kidney punch tests. Thus, there is no need to hop on one foot.

Lewin's snuff test, Valsalva's and Naffziger's, all tests for space-occupying lesions, can be replaced with history questions, coughing and modern imaging. Simply asking the patient if it hurts to laugh, cough, sneeze or have a bowel movement can provide information about the possibility of a space-occupying lesion. Coughing is part of Dejerine's Triad of coughing, sneezing and bearing down (Valsalva's). Coughing is easy to do on command and the pressure / pain generated is momentary. This makes it easier than sneezing and less likely to cause side effects than Valsalva's.

In today's world of clinical practice, a CT and MR scans are the best diagnostic choice for suspected space-occupying lesions.

Patients with foot drop can be assessed by heel walking and/or manual muscle testing of the tibialis anterior muscle. Their shoes can also be inspected for scrapes on the toe region. These are much better options than the foot drop test.

As stated earlier, regardless of which tests are used, use should be based on patient need and the doctor's clinical judgment. Orthopedic tests aren't really practice-building tools.

Why do we still talk about these tests? Maybe it is for historical reasons. Maybe it is because authors still write about them. Maybe it is because they are still taught in the colleges. Maybe it is because board examiners still ask questions about them. Maybe it is in case a doctor ends up practicing where modern diagnostic modalities aren't available - places like the Australian Outback or parts of the U.S. and Canada where Big Foot sightings are common. I don't know. I do know that you probably know more about these tests after reading this than you did before.

Resources

- Cipriano JJ. *Photographic Manual of Regional Orthopaedic and Neurological Tests, 4th Edition*. Philadelphia: Lippincott Williams & Wilkins; 2003.
- Evans RC. *Illustrated Orthopedic Physical Assessment, 2nd Edition*. St. Louis: Mosby; 2001.
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- Vizniak, NA. *Quick Reference Clinical Consultant Physical Assessment, 2nd Edition*. Canada: Professional Health Systems, Inc.; 2006.

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