

# What physical exam techniques are useful to detect malingering?

Steven Greer, MD, Lee Chambliss, MD, MSPH

Moses Cone Memorial Hospital Family Medicine Residency, Greensboro, NC

Leslie Mackler, MSLS

Moses Cone Health System Library, Greensboro, NC

## EVIDENCE-BASED ANSWER

No examination technique objectively proves malingering (strength of recommendation [SOR]: **C**, expert opinion). Waddell's signs are associated with poor treatment outcomes but cannot discriminate organic

from nonorganic causes (SOR: **B**, systematic review of low-quality studies). Hoover's and the Abductor sign indicate nonorganic paralysis (SOR: **C**, small, lower-quality case-control studies) (**TABLE 1**).

## CLINICAL COMMENTARY

### Meticulous examination and documentation will save time and trouble down the road

Warning flags for malingering include persistent noncompliance during prescribed evaluation or treatment, striking inconsistency between physical findings and stated symptoms, and an attorney or insurance company referring the patient to you. If monetary compensation is involved, malingering can potentially be prosecuted as fraud.

Meticulous examination and documentation will save you time and trouble down the road. If you find evidence of malingering, confronting the patient directly will likely result in animosity towards you from the patient and may result in

litigation. The confrontation may escalate into violent behavior. Further complicating matters, specialist referral often reinforces the malingering behavior. A common option at approaching the potentially malingering patient is to allow him or her the opportunity to save face: "Well, Mr. Q, I am not finding the usual signs that go along with the complaints you are having...."

If you are in doubt of a diagnosis of malingering, it is generally safest to assume a person is not malingering until you specifically witness a contradictory event.

**Tim Huber, MD**

US Navy, Camp Pendleton, Calif

## ■ Evidence summary

The 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* defines malingering as "the intentional production of false or grossly exaggerated physical or psychological symptoms motivated by external incentives such as avoiding military duty, avoiding work, obtaining financial compensation, evading criminal prosecution, or obtaining drugs."<sup>1</sup> Malingering is not considered a mental disorder because symptoms are intentionally produced for external incentives.

No physical exam maneuver can determine a patient's external incentives. Traditionally, a physician uses certain exam techniques to determine if symptoms

are of functional, or nonorganic, origin. Both terms denote the absence of a structural or physiological source for the phenomena, and include malingering and mental disorders such as factitious disorder, conversion disorder, and somatoform disorders. Our literature search only found studies concerning the detection of nonorganic causes of back pain, paralysis, and sensory loss.

Several exam tests are commonly thought to detect nonorganic causes of low back pain. Gordon Waddell described 8 signs in 5 categories (**TABLE 2**) used to "identify [back pain] patients who require more detailed psychological assessment."<sup>2</sup> A systematic review critiqued 60 studies of

TABLE 1

Summary of tests for the detection of malingering

TEST	SYMPTOMS	DESCRIPTION	EVIDENCE/OUTCOMES	SOR
McBride's	Back pain with radicular symptoms	Stand on one leg. Flex symptomatic leg and raise to chest. Refusal or pain = nonorganic	No published studies	C (expert opinion)
Mankopf's	Back pain	1700 g pressure applied to the middle phalanx of the second finger of the nondominant hand. True pain should increase heart rate.	Did not correlate with organic pain	C (small inconclusive diagnostic case-control study)
Waddell's	Back pain	Positive signs from 3 or more categories (TABLE 2)	Cannot discriminate organic from nonorganic	C (from SR)
		Associated with poorer treatment outcomes		C (from SR)
		Not associated with secondary gain		B (from SR)
Hoover's	Leg paresis	Cup heels and have patient press down with paretic limb. Then have patient raise opposite limb. True paresis if no difference in downward pressure at heels	Indicates nonorganic paresis	C (extrapolated from small diagnostic case-control study using strain gauge)
Abductor	Leg paresis	Ask patient to abduct paretic leg to resistance. In true paresis, opposite leg should abduct.	Indicates nonorganic causes	C (small, lower-quality case-control study)
Arm Drop	Arm paresis	Hold paretic hand above face and drop it. If hand misses face, paresis is nonorganic	No published studies	C (expert opinion)
Midline Split	Sensory loss	Test facial sensation to pinprick. Nonorganic loss of sensation is delineated by the midline.	Very weakly indicates nonorganic cause	C (small diagnostic case-control study)

SOR, strength of recommendation (see page 722); SR, systematic review.

Waddell's signs published between 1980 and 2000.<sup>3</sup> The authors performed a thorough database search, including hand searches of key pain journals, meeting abstracts, and textbooks. The majority of the reviewed studies were small and of lower quality. The review found little evidence on test-retest or interrater reliability. There was consistent evidence that Waddell's signs are associated with poorer treatment outcomes and generally consistent evidence that they are not associated with secondary gain and cannot discriminate organic from nonorganic problems.

A small, diagnostic case-control study of Mankopf's test, which is based on the theory that pain increases heart rate, investigated 20 chronic low back pain patients considered nonorganic vs 20 pain-free controls using mechanical pain stimulus applied to subjects' fingers.<sup>4</sup> There was no significant difference in heart rate response between groups, and no significant effect of pain on heart rate in either group. The authors did not define their criteria for determining patients' back pain as non-organic, nor did they include patients with low back pain

TABLE 2

## Waddell's signs

CATEGORY	SIGNS
<b>Tenderness</b>	<i>Superficial</i> : light pinching causing pain = positive <i>Nonanatomic</i> : deep tenderness over a wide area = positive
<b>Simulation</b>	<i>Axial loading</i> : downward pressure on the head causing low back pain = positive <i>Rotation</i> : Examiner holds shoulders and hips in same plane and rotates patient. Pain = positive
<b>Distraction</b>	Straight leg raise causes pain when formally tested, but straightening the leg with hip flexed ninety degrees to check Babinski does not
<b>Regional</b>	<i>Weakness</i> : multiple muscles not enervated by the same root <i>Sensation</i> : glove and stocking loss of sensation.
<b>Overreaction</b>	Excessive show of emotion

caused by an identifiable pathology. There was no mention of blinding. This literature search found no published studies of McBride's test, where the patient's refusal to stand on the unaffected leg and flex the affected leg to the chest determines a feigned radiculopathy.

A few tests attempt to detect nonorganic causes of paralysis. In Hoover's test, a patient is asked to alternately press down with the paralyzed leg and raise the unaffected leg to resistance, while the hand of the examiner cups the heel of the affected leg.<sup>5</sup> A small, diagnostic case-control study using a computer-assisted strain gauge to measure movement effort during Hoover's test involved 7 women with true paresis, 9 with nonorganic paresis, and 10 controls.<sup>6</sup> The investigators diagnosed nonorganic paresis by history, neurological exam, and lack of positive neuroradiologic findings. The authors calculated a maximal involuntary to voluntary ratio for each patient's extremities. The calculation discriminated between all 9 nonorganic patients and both the normal controls and patients with true paresis. The authors did not mention blinding in the study. No attempt was made to compare the strain gauge measurements with a clinician-performed Hoover's test.

The Abductor sign, based on a similar theory that thigh abductors work in

concert, was developed and studied by one individual.<sup>7</sup> In this diagnostic case-control study, the single author tested 33 patients from his practice, 17 with organic paresis, and 16 with nonorganic paresis. The author differentiated organic from nonorganic paresis by history, physical exam, and various imaging studies with no independent assessment. He reported his test as 100% accurate. We did not find any published studies of the Arm Drop test, where feigned paralysis of an upper extremity is tested by holding the arm over the face of the supine patient and letting go.

The Midline Split test attempts to detect nonorganic causes of sensory loss. The fact that cutaneous nerves cross the midline is the basis for the idea that a sharp midline split denotes nonorganic sensory loss. In 1 diagnostic cohort study of 100 people presenting to a neurology department with complaints of decreased sensation on one side of the face, 80 patients were determined to have organic deficits such as multiple sclerosis or stroke. The author did not describe how these diseases were diagnosed. Of those with organic deficits, 7.5% showed midline splitting of sensory loss, falsely suggesting a nonorganic process. Only 20% of the patients with nonorganic sensory loss showed the expected midline split.<sup>8</sup>

## FAST TRACK

**If you are in doubt about a diagnosis of malingering, it is safest to assume a person is not—unless you witness a contradictory event**

# THE JOURNAL OF FAMILY PRACTICE

## Evidence-based medicine ratings

THE JOURNAL OF FAMILY PRACTICE uses a simplified rating system called the Strength of Recommendation Taxonomy (SORT). More detailed information can be found in the February 2003 issue, "Simplifying the language of patient care," pages 111–120.

**Strength of Recommendation (SOR)** ratings are given for key recommendations for readers. SORs should be based on the highest-quality evidence available.

- A Recommendation based on consistent and good-quality patient-oriented evidence.
- B Recommendation based on inconsistent or limited-quality patient-oriented evidence.
- C Recommendation based on consensus, usual practice, opinion, disease-oriented evidence, or case series for studies of diagnosis, treatment, prevention, or screening

**Levels of evidence** determine whether a study measuring patient-oriented outcomes is of good or limited quality, and whether the results are consistent or inconsistent between studies.

### STUDY QUALITY

1—Good-quality, patient-oriented evidence (eg, validated clinical decision rules, systematic reviews and meta-analyses of randomized controlled trials [RCTs] with consistent results, high-quality RCTs, or diagnostic cohort studies)

2—Lower-quality patient-oriented evidence (eg, unvalidated clinical decision rules, lower-quality clinical trials, retrospective cohort studies, case control studies, case series)

3—Other evidence (eg, consensus guidelines, usual practice, opinion, case series for studies of diagnosis, treatment, prevention, or screening)

### Consistency across studies

**Consistent**—Most studies found similar or at least coherent conclusions (coherence means that differences are explainable); *or* If high-quality and up-to-date systematic reviews or meta-analyses exist, they support the recommendation

**Inconsistent**—Considerable variation among study findings and lack of coherence; *or* If high-quality and up-to-date systematic reviews or meta-analyses exist, they do not find consistent evidence in favor of the recommendation

## CLINICAL INQUIRIES

The author apparently performed the sensory exam without blinding or independent confirmation.

### Recommendations from others

The *DSM-IV* recommends suspicion of malingering for patients who present with 2 or more of the following: medicolegal issues, disagreement between objective and subjective stress or disability, noncompliance with evaluation or treatment, or anti-social personality disorder.<sup>1</sup>

The American Medical Association published the Guides to the Evaluation of Permanent Impairment, which states, "Confirmation of malingering is extremely difficult and generally depends on intentional or inadvertent surveillance."<sup>9</sup>

### REFERENCES

1. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV, 4th ed.* Washington, DC: American Psychiatric Association; 1994.
2. Waddell G, McCulloch JA, Kummel E, Venner RM. Nonorganic physical signs in low-back pain. *Spine* 1980; 5:117–125.
3. Fishbain DA, Cole B, Cutler RB, Lewis J, Rosomoff HL, Rosomoff RS. A structured evidence-based review on the meaning of nonorganic physical signs: Waddell signs. *Pain Med* 2003; 4:141–181.
4. Peters ML, Schmidt AJM. Psychophysiological responses to repeated acute pain stimulation in chronic low back pain patients. *J Psychosom Res* 1991; 35:59–74.
5. Hoover CF. A new sign for the detection of malingering and functional paresis of the lower extremities. *J Am Med Assoc* 1908; 51:746–747.
6. Ziv I, Djaldetti R, Zoldan Y, Avraham M, Melamed E. Diagnosis of "nonorganic" limb paresis by a novel objective motor assessment: the quantitative Hoover's test. *J Neurol* 1998; 245:797–802.
7. Sonoo M. Abductor sign: a reliable new sign to detect non-organic paresis of the lower limb. *J Neurol Neurosurg Psychiatry* 2004; 75:121–125.
8. Rolak LA. Psychogenic sensory loss. *J Nerv Ment Dis* 1988; 176:686–687.
9. Cocchiarella L, Andersson G. *Guides to the Evaluation of Permanent Impairment*. 5th ed. Chicago: AMA Press, 2001.