CAN PHYSICAL THERAPISTS IDENTIFY MALINGERED PAIN IN THE CLINICAL SETTING?

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ABSTRACT

Background: Many physiotherapists use tools in an attempt to detect malingering; however, there are discrepancies within the literature as to their ability to identify patients who malinger.

Purpose: To survey the literature available on diagnostic tools that could be used in physiotherapy practice and their ability to detect malingering of pain.

Methods: We conducted a review of 4 international databases, with a specific focus on review articles. Search terms included malingering, pain, symptom amplification and exaggeration.

Results: Our search revealed a number of tools being used to detect malingering in the clinical setting: Pain Patient Profile (P3), Modified Somatic Perception Questionnaire (MSPQ), Symptom Checklist 90-Revised (SCL-90-R), Minnesota MultiPhasic Personality Inventory 2 (MMPI-2), Symptom Validity Tests (SVT), Waddell Signs, and Manual Muscle Tests (MMT). There was no strong empirical support for any of the tools. Consistent limitations interfered with our ability to label any one of them superior to the others or in fact as valid means of identifying malingered pain.

Conclusion: Our review suggests that there are currently no tools that can be confidently supported as a consistently strong test of malingered pain. The absence of both a clear gold standard and a consensus definition of malingering pose a challenge to the development and validation of tools to identify malingering.

Keywords: malingering, symptom exaggeration, pain, symptom amplification, screening
INTRODUCTION

Malingering is “the intentional (conscious) production of false or grossly exaggerated physical or psychological symptoms motivated by external incentives”.\(^1\) The prevalence of malingering has been estimated to range from 1.25-10.4% amongst chronic pain samples.\(^2\) Researchers have argued that failure to detect malingering is responsible for the diversion of a considerable amount of limited health care dollars.\(^3\)

Investigators have attempted to develop tools that clinicians, including physiotherapists, can use to identify intentionally malingered pain. While many of these tools are reportedly sensitive to malingering, their accuracy has been questioned.\(^2,4\) Fishbain et al.\(^2\) conducted a review of the literature and concluded that “there are currently no reliable methods to identify malingering”. Conversely, in their review, Bianchini et al.\(^3\) argued that multiple tools are able to accurately detect and diagnose malingering if the limitation of false positive error rates is prioritized over sensitivity. Thus, controversy exists about whether the tools currently used to detect malingering pain are reliable or valid.

The value of validating or discrediting a patient’s subjective report is expressed throughout the scientific literature.\(^2,3,4\) Clinicians and researchers alike have been seeking methods of accurately identifying “malingers” as it is argued that the presence of financial incentives may adversely influence outcome through incentivized disability.\(^5\) For the clinician, providing unnecessary treatments can potentially harm the patient and take time away from those who have legitimate conditions. The issue of malingered pain is also important among personal injury claimants who may experience depressed emotional, physical and financial wellbeing if labelled a ‘malingerer’. Even if conservative estimates of the prevalence of malingered pain are accurate, it still represents a considerable burden to health care.\(^2\)

There is a clear need to use only those tools that can accurately and consistently detect malingered pain. The aims of this review are to survey the literature available on tools that can be used by physiotherapists to detect malingered pain and to describe the current state of knowledge regarding their clinimetric properties.

METHODS
We searched the literature for the most recent review articles between 2000 and 2011. Four international databases (Pubmed/MEDLINE, CINAHL, PsychINFO, and SCOPUS) were searched using the following terms: malinger*, exaggerat*, amplif*, and pain, with results limited to review articles or meta-analyses. We first searched the terms malinger*, exaggerat* and amplif* using the Boolean logic “OR”. These terms were then combined with “pain” using the Boolean logic “AND”. After results from all of the databases were obtained and duplicate articles were eliminated, 54 review articles remained. Two authors reviewed the abstracts and excluded articles that did not meet our inclusion criteria. Studies were included if: (1) they were in the English language, (2) the tool described in the study could be used to detect malingering and (3) the tool could be practically implemented in a physiotherapy clinical setting. This resulted in 24 review articles. The articles were then divided between the five authors and through group discussion, a consensus was reached on the tests that were relevant in the physiotherapy setting. A secondary search was performed where each of the tests identified from the primary search was searched on Pubmed/MEDLINE using the following search template: (malinger* OR exaggerat* OR amplif*) AND (test name “OR” alternative names). Relevant articles that met our inclusion criteria were then selected for our study. Finally, we conducted a secondary search of the reference lists of the included articles where more information on properties of the tools described in the review was required to form a valid opinion on its usefulness.

RESULTS

Seven tools were chosen from the 24 review articles selected: Pain Patient Profile (P3), Modified Somatic Perception Questionnaire (MSPQ), Symptom Checklist-90-Revised (SCL-90-R), Minnesota Multiphasic Personality Inventory 2 (MMPI-2), Symptom Validity Tests (SVT), Waddell’s Signs, and Manual Muscle Testing (MMT). The Appendix describes each of the tests in more detail. The following information was gathered regarding each tool: original author, construct measured, its application, number of items, special requirements, time required to administer, discriminative accuracy (where reported), and cost of the tool (Table 1). The results from these studies including clinimetric properties are presented in Table 2.
**P3, MSPQ, SCL-90-R**

The P3 is a 44-item self-report questionnaire that is intended to capture depression, anxiety, and somatization associated with pain. It includes a validity scale with 5 items. The P3 was developed using data from pain patients and community samples by Tollison et al. The administration of the tool is simple, but the scoring algorithms are complex and requires computerized software to accurately score. The SCL-90-R is a 90-item self-report checklist and is much like the P3 in its administration and scoring algorithm, which also requires computerized scoring for accuracy. This tool is designed to capture psychological problems and genuine pain patterns. Derogatis used data from adult non-patients, adult psychiatric outpatients, adult psychiatric inpatients, and adolescent non-patients to identify ‘normal’ and abnormal’ pain patterns. The MSPQ is a 13-item self-report tool that measures somatic complaints in patients. It was developed using data from a sample of patients with chronic backache and community samples. The tool can be easily administered and scored by hand.

Upon examination of the current literature, deficiencies were identified in the methods of validation employed for the P3. The choice of a cut-score of 11 points to indicate that a patient is exaggerating symptoms appears to have been an arbitrary decision. The research indicates that this score may lead to at least 9% false-positives. Respondents that score below 11 on the validity scale may be intentionally exaggerating pain symptoms, indicating that the validity scale of the P3 may not be reliable in capturing all types of malingering (Table 2).

Similar issues to the P3 were encountered when examining the MSPQ and SCL-90-R as they have been studied primarily under the assumption that “true” patients with pain exhibit a particular profile and patients who malarnger will deviate from this profile. However, these assumptions have not been verified in well-designed research studies. Since the profiles themselves may not be accurate, this can lead to problems in subsequent studies that use these profiles to compare patients with chronic pain to simulated malarnerers.

**MMPI-2**
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The MMPI-2 is a 567-item self-report measure for adult personality and psychopathology.\textsuperscript{15} The original MMPI was developed by Hathaway and McKinley,\textsuperscript{15} and later revised by Butcher to become the MMPI-2.\textsuperscript{16} Normative and psychiatric inpatient group data of various psychiatric disorders has been collected since the 1940’s in the assessment of response styles and detection of malingered psychological symptoms. This information is used to assess the degree to which the respondent’s score resembles the typical scores represented in the normative data for that population.\textsuperscript{17} Administrating the test is time-consuming due to the high number of items and scoring can be done by hand or using computer software.\textsuperscript{18}

Among the 126 scales available in the MMPI-2, 9 validity scales are used to assist the clinician in identifying intentional exaggeration of symptoms, including the F, F\textsubscript{B}, F(p) and Fake Bad Scale (FBS).\textsuperscript{17,18} The F or infrequency scale is a 64 item validity scale used to detect attempts at “faking good” or “faking bad”.\textsuperscript{15} Individuals who score high on this test are thought to be exaggerating their responses by either trying to appear better or worse than they actually are.\textsuperscript{19} The questions within this scale are designed to determine whether respondents are contradicting themselves in their responses. The F\textsubscript{B} or Back F scale is another validity scale containing 40 items used to detect inconsistent responses.\textsuperscript{18} This scale is analogous with the F scale except these items are placed later in the test booklet, where deviant responses are assessed. The F(p) or the infrequency-psychopathology scale is a 27-item validity scale used to detect malingering of psychopathological symptoms.\textsuperscript{17,20} This tool was developed to take into account the elevated rates of psychopathology among psychiatric inpatients. Elevated scores on this scale suggest that the test-taker is feigning psychopathology as compared to what is commonly found amongst individuals in inpatient psychiatric facilities.\textsuperscript{20} Given the significant comorbidity of psychiatric illness to patients with chronic pain conditions, significant elevations on these scales are thought to point towards a marked distortion in self-report.\textsuperscript{4} The FBS is a symptom validity scale containing 43 items that was developed from a subset of MMPI-2 items.\textsuperscript{4} This scale is used to identify potentially exaggerated claims of disability or exaggeration of illness. Depending on the cut-off score used, an elevated score suggests intentionally exaggerated pain.
Current literature shows that the MMPI’s infrequency scales (F, F(p), Fb) can accurately identify psychiatric patients who are either generally exaggerating existing psychopathology or feigning a particular psychiatric condition, such as depression or schizophrenia; however, detecting pain malingering has been less promising. This is due to the heavy reliance on self-reporting and the lack of scales available on the MMPI-2 to assess the exaggeration of somatic complaints aside from the FBS. Developers of the FBS suggest that raw scores above 22 should raise concerns about the validity of self-reported symptoms, especially with individuals who have been cleared from physical injury or medical problems. Inconsistency in the use of cut scores exists between authors and there is little psychometric information available on the FBS. Many of the studies that investigated the tool’s properties were limited by methodological problems including small sample size, unrepresentative samples drawn by the author, and the lack of cross-validation with more general psychiatric and normative groups.

**Symptom Validity Tests**

In general, aSVT involves presenting an individual with a stimulus and then prompting them to select the correct answer from a fixed number of options (usually two). The number of items varies depending on the specific test used. SVTs were intended to detect malingered sensory-perceptual deficits but became more commonly used in testing for feigned memory impairment. SVTs were developed using data from neuropsychological patients by Haughton et al. and are easy to administer. For example, the Portland Digit Recognition Test (PDRT) involves orally presenting patients strings of 5 digits and assessing their ability to recognize them visually. While commonplace in neuropsychological examinations of patients who have sustained a head injury, symptom validity tests are not in widespread use among the pain population. However, it is argued that since cognitive impairment is often a component of pain, it is important to address the veracity of cognitive deficits in pain patients seeking compensation. Bianchini et al. proposed criteria for the diagnosis of malingered pain-related disability. According to this classification system, a score statistically below 50% on a forced-choice SVT is regarded as evidence of definite malingering. Several studies have employed the criteria of Bianchini and colleagues to validate the ability of various SVT’s to
detect malingering in patients with pain. Greve et al. evaluated the accuracy of the PDRT in detecting malingered pain-related disability. Depending on the cut-off score employed by the PDRT it was reported to detect between 33% and 60% of “definite malingering” patients while specificity values ranged from 94% to 97% suggesting a higher number of false negatives but few false positives. In SVT validation studies among people with pain, the gold standard used is a statistical score below 50% on another SVT. For instance, Greve et al categorized patients as definite malingerers if they had a statistically significant sub-50% score on the Test of Memory Malingering (TOMM). Investigations of the ability of TOMM itself to detect malingered pain-related disability rely on a statistically negative response bias on the PDRT as the gold standard. This circular validation among studies investigating SVT for malingering diagnosis is common in the literature. While these studies demonstrate a strong correlation between SVT’s, and has established the concurrent validity of these measures, the lack of a clear gold standard undermines their content validity.

**Waddell Signs**

Waddell’s Signs are eight physical signs divided into five categories that are intended as a screen for further psychological evaluation, and predict poor prognosis with treatment. These signs were developed by Waddell et al. using a sample of Canadian and British patients with chronic back pain, worker’s compensation claims and a history of failed treatment. Waddell Signs are quick and easy to assess during a regular physical examination. If an individual scores positive for a single sign, then they are positive for that category. If three or more of the five categories are positive, then the result is clinically significant. Isolated positive signs are disregarded.

Two review articles by Fishbain et al. relating to Waddell’s Signs emerged from the primary search and each article found no association between malingered pain and Waddell’s Signs. The definition of malingering proposed by Fishbian et al. was generally comprised of the following four factors: 1) being a patient on worker’s compensation and/or being in active litigation; 2) no improvement of Waddell’s Signs with treatment; 3) performance on paper-pencil tests (i.e. MMPI) indicating that performance may be affected by secondary gain issues; and 4) physician dishonesty perception.
definition of malingered pain is potentially flawed since the relationship between malingering and the above concepts has yet to be concretely established. Therefore, the use of a non-validated definition of the target state makes it difficult to determine whether Waddell’s Signs can detect malingering.

Since the publication of Waddell’s original article in 1980, researchers and clinicians have misinterpreted and misused Waddell’s Signs to identify malingered pain.35,38 Contrary to popular belief, Fishbain et al.34 found that Waddell’s Signs are in fact an organic phenomenon and cannot be used to differentiate organic from nonorganic causes. Waddell’s Signs should be more appropriately called “pain behaviours” since they can be explained by the neurophysiology of pain34,35. For example, “superficial tenderness” could be due to a patient’s low pain tolerance or the presence of allodynia, a sensitized central nervous system when exposed to prolonged pain35. Therefore, it is important for physiotherapists to recognize that Waddell’s signs should not be used to detect malingering. Rather they are best used to screen patients requiring further psychological assessment, and they also indicate risk of a poor response to either conservative treatment or surgery.34, 36, 39

**Manual Muscle Testing**

MMT has been proposed as a tool for detection of intentional pain exaggeration through the measure of sincerity or consistency of effort with repeated testing of maximal isometric contraction, commonly referred to as Coefficient of Variation (CV).2,40-45 The use of CV is based on the assumption that intentional submaximal effort shows greater variability (higher CV) than maximal effort.46 As proposed by the motor recruitment model, repeated maximal contractions require the simplest motor control and are therefore easily reproducible while submaximal efforts require the coordination of higher order motor programming, proprioceptive feedback, and fine motor corrections.46

Clinicians are first required to measure the force output of each contraction using a strength testing instrument such as a dynamometer.41 CV is then calculated by dividing the standard deviation of three or more trials by their mean and multiplying by 100 to obtain a unit-less percentage.44 An individual with a CV above an established cut-off score, whose efforts are considered inconsistent enough to be labelled submaximal, is interpreted to be exaggerating their pain behaviours.42-44
The current literature regarding the effectiveness of Coefficient of Variation (CV) to detect malingered pain is contradictory at best. In fact, authors of review articles and a recent meta-analysis do not recommend its use in clinical settings.\textsuperscript{2,40-45} The controversy in the research is likely due to differences in methods among studies. Utilization of different strength tasks (i.e. grip strength, elbow flexion, knee extension, trunk flexion and extension, and lifting) by authors is one difference in methods observed.\textsuperscript{44} Little agreement between authors as suggested by the broad spectrum of CV cut-off values (i.e. 7.5\% to 20\%) may also explain the wide range of sensitivity and specificity values reported (Table 2).\textsuperscript{46} However, even when factoring the same parameters and type of strength test, studies have yet to find a specific confidence interval that produces a combination of sensitivity and specificity values adequate for clinical practice.\textsuperscript{41,42,44}

Investigators have so far reported low test-retest reliability or stability of CVs that are based on 3-5 repetition.\textsuperscript{42} Shectman found test-retest reliability to range from 0.02-0.41 for maximal efforts and 0.03-0.64 for submaximal\textsuperscript{44} with 5 repetitions being more stable than 3.\textsuperscript{47} While increasing the number of strength trials in research may result in greater stability of CVs,\textsuperscript{42-48} administering more than 5 repetitions may limit its feasibility in clinical settings given time constraints and the potential effects of fatigue.\textsuperscript{49}

Based on the statistical principle for CV, it can only be theoretically useful if the mean and SD increases proportionally. Thus, for this mathematical model to apply, a larger mean (maximal effort) should yield greater absolute variability (SD) than a smaller mean (submaximal effort).\textsuperscript{49} However, this principle contradicts the muscle recruitment model where submaximal effort is instead expected to have greater variability (SD).\textsuperscript{43} Concerns regarding this issue have been expressed by several authors. Shectman\textsuperscript{44,49} demonstrated little difference in SD between effort levels. In addition, Fairfax et al.\textsuperscript{51} and Bohannon\textsuperscript{42} both found negative correlations between mean strength and CV. These results suggest the possibility that the increase in relative variability or CV in submaximal efforts is due to a decrease in mean torque rather than a \textit{true} increase in absolute variability (SD).\textsuperscript{44,49} Given the inherent bias of CV, producing inflated values during submaximal efforts, clinicians and researchers should be cautious when interpreting results.
Even if a cut-off value can be established and CV is proved to be a valid tool, inconsistency may not necessarily suggest malingering. For instance, there are many extraneous variables that could affect muscle testing that have not been accounted for in the research to date. Robinson et al\textsuperscript{42} describes factors such as fear of pain, injury or re-injury, anxiety, depression, anger, work satisfaction, motivation, medication consumption, and even actual pain itself that may contribute to variability in performance.\textsuperscript{42} Therefore, true strength may not be accurately captured or appreciated using this tool and the ability to extrapolate the results from research to clinical settings is questionable. The lack of empirical support for CV and inconsistent methods raises questions of whether MMT can be used independently to determine sincerity of effort especially given the potential for psychological or physical harm to the patient if an inappropriate diagnosis is made.

**DISCUSSION**

We have reported the results of a scoping survey of existing literature describing tools that have been investigated for the usefulness in detecting intentionally malingered pain. We have limited the search to tools that could reasonably be performed in a standard rehabilitation clinic that is not outfitted with advanced laboratory-based equipment. This is an important consideration considering that many chronic pain conditions exist within the context of a litigious environment, such as post-motor vehicle accident or work-related injuries, in which third party funders provide compensation for injured clients. In an era where many people with chronic pain are forced to prove the validity of their symptoms often in the absence of hard objective data, an understanding of how well clinicians are able to accurately discriminate between legitimate and exaggerated complaints seems particularly relevant.

Several consistent deficiencies have emerged throughout this review; two important concerns include the lack of a consensus definition and that of a reliable gold standard. Many studies commonly use simulated patients as their gold standard,\textsuperscript{4, 6, 9-12, 14, 20, 42, 44} requiring healthy individuals to feign a pain provoking injury. Extrapolating data from studies that use this type of gold standard may be limited due to difficulties in capturing inherent influential motivators (ex. monetary gain and compensations) of individuals who are truly malingering. Unfortunately, resolution of this methodological issue can be
challenging as known malingerers, assuming they could be identified, may not be willing to participate or volunteer information to researchers.

The MSPQ, SVT’s and Waddell Signs use cross validation against other tools as their gold standard, which can be potentially problematic. For example, Waddell’s Signs have been validated against the MMPI as a gold standard. Another example is the circular validation used in SVT’s, where the PDRT has been validated against the TOMM as a gold standard, which itself is validated against the PDRT as a gold standard. Although these studies may demonstrate a correlation between tests that identify malingering pain and establish the concurrent validity of these measures, the lack of a clear gold standard undermines their content validity.

Our review revealed other inconsistencies such as the lack of established normative data for pain for the P3, SCL-90-R, MMPI-2, and MSPQ; however, many research articles claim that patients who are malingering pain will deviate from a pattern that such patients would ‘normally’ exhibit. This ‘normative’ data has been established from studies that included mixed samples, with various severities, locations, and causes of pain. Given the variety of influences on any individual's pain experience, it would not be abnormal to see a patient that deviates from a normal presentation or clinical pattern. This raises the spectre that clinicians could falsely conclude that a patient is exaggerating their pain symptoms because they do not fit a poorly defined normal presentation for pain. It is challenging to accept this data since there is no clearly defined ‘normal’ presentation of a patient in pain as it is a subjective experience that is difficult to objectify.

Many researchers have attempted to identify cut-off scores in the tools that they used to detect malingered pain in the P3. The cut-off values that have been proposed are problematic as there is little consistency in the values chosen. Cut scores have yet to be validated in well-designed studies; therefore it is unknown if the scores capture an acceptable number of true positives and/or true negatives. Clinicians and researchers that use these values need to be cautious as the implications for falsely identifying patient as a malingerer could have adverse consequences for a patient who is truly experiencing pain.
There are many variables that affect the results of a physical examination type test such as Waddell’s Signs or MMT. Patient and therapist factors could play a large role in the outcome of this type of test. For example, it is possible that the therapist’s own biases, their perception that the patient is malingering, may affect the results of the physical assessment. In addition, patient factors such as perceptions of pain, fear-avoidance beliefs, coping strategies and many others can influence the patient’s response to the test, but may well be legitimate concerns. Therefore, it is important to remember that any physical examination tool is limited by both patient and examiner factors.

LIMITATIONS

We specifically targeted tools that were deemed to be applicable to the clinical setting through consensus agreement. The factors that influenced this decision were; cost, space required, licensing fees, requirements for special training, and testing procedures that fell at least marginally within the scope of physiotherapy practice. It is possible that there are other tools that exist that have yet to be the subject of a review, which would not have been captured with our search strategy.

We chose reviews as our primary search as such a strategy provided at least some confidence that the tool had been evaluated more than once. It is difficult to make recommendations about clinical practice on the basis of only a single research study. The reviews were also deemed to be the best ways to gather information on the tools that are available in an efficient manner. Once it became clear that none of the tests we found were going to be confidently endorsed as a valid tool for identifying malingered pain, the incentive to score the quality of the reviews was reduced and we opted instead to focus on describing the tests and the current state of the literature pertaining to them, as more of a ‘survey of the landscape’ rather than a formalized review of reviews. Of note, some of the included review articles had known methodological issues that were not addressed; therefore, readers should keep this in mind when considering the results of this review. However, we believe this exercise has provided a reasonably accurate overview of the tools that are available, and we have made several suggestions as to how future research in this area could be conducted to improve confidence in results.
Notably future research needs to focus on creating a testable consensus definition of malingered pain and its operationalization. Most definitions are vague and thus difficult to test experimentally; therefore, a clear definition is vital for future research. A gold standard of malingered pain needs to be recognized for any evaluation of discriminatory validity. However, we recognize the difficulty as patients who are known malingerers would have to be a) identified and b) willing to volunteer for research. Finally, researchers need to consider whether further investigation of tools to detect malingered pain is necessary, as pain itself is a subjective phenomenon and currently cannot be objectively visualized due to the multitude of factors that can influence a patient’s pain experience.

CONCLUSIONS

Despite previous estimates on the prevalence of malingering, which may or may not be accurate, the general consensus among researchers, clinicians, and funders is that intentional malingering does occur and remains an important issue. The reviewed studies suggest that there are currently no reliable or consistently valid methods to identify malingered pain usable in routine physiotherapy clinical practice. In light of the paucity of evidence to support a single tool’s ability to detect malingering, we contest that malingered pain cannot be confidently identified. Therefore, clinicians should be cautious using methods that claim to be valid indicators of malingered pain. As mentioned by Eisendrath54, unless there is clear evidence that a person is malingering, the subjective reporting of pain should be regarded as the truth. In fact, the therapist cannot really be certain that a patient who confesses to malingering is in fact even truthful themselves. Thus, rather than reducing the clinical decision to a simple dichotomy of malingered vs nonmalingered, clinicians who believe that intentional exaggeration of pain is interfering with treatment progression should instead consider all of the factors that surround the patient’s expression of pain (i.e. perception of pain, coping strategies, motivation for malingering, fear, self-efficacy etc.) and attempt to understand the individual's motivations for such behaviour. Based on this assessment, therapists are encouraged to consider a multidisciplinary approach to the treatment of pain that encompasses the whole person including their values, beliefs and goals.

KEY MESSAGES
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**What is already known on this topic**

Whilst most experts will agree that intentional exaggeration of pain symptoms for external incentives occurs, especially within the population with chronic non-malignant pain, little is known regarding the ability of physiotherapists or other non-psychiatrists to identify such exaggerated behavior. Several clinical tools intended to screen for intentionally malingered pain currently exist, but their application to routine clinical practice is unknown.

**What this study adds**

Through a narrative review and consensus process, we have identified 7 different methods that have been proposed as useful clinical screening tools for identifying intentionally malingered pain. In a field where reliability and validity are especially important, consistent deficiencies in the definition and operationalization of malingering, and questionable approaches to establishing clinimetrics, mean that no tool can currently be promoted as consistently accurate.
REFERENCES


21. Yossef S, Porath B and Tellegen A. MMPI-2; FBS (Symptom Validity). Retrieved from:


### Pain Patient Profile

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### Modified Somatic Perception Questionnaire

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### Symptom Checklist-90-Revised

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Minnesota Multiphasic Personality Inventory-2 (MMPI-2)  

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- The Minnesota Report™: Adult Clinical System-Revised Interpretive Report  
- The Minnesota Report: Interpretive Reports for Forensic Settings |
| Scoring Options | Q™ Local Software  
Mail-in Scoring Service  
Hand Scoring |
| Scales | 9 Validity Scales  
5 Superlative Self-Presentation Subscales  
10 Clinical Scales  
9 Restructured Clinical (RC) Scales  
15 Content Scales  
27 Content Component Scales  
20 Supplementary Scales  
31 Clinical Subscales (Harris-Lingoes and Social Introversion Subscales)  
Various special or setting-specific indices |
| Norms | Nationwide adult community sample consisting of 1,138 males and 1,462 females from various areas of the United States ranging from 18-80 years of age. |

Symptom Validity Tests: Portland Digit Recognition Test (PDRT)  

| Purpose | The Portland Digit Recognition Test (PDRT) is designed for the neurological assessment of exaggeration and malingering. |
| Population | The test has been developed to evaluate adult individuals. |
| Type of Administration | The test is administered to individual client. |
| Test Description | The test requires 36 cards, each with two five-digit numbers printed on them, one above the other. During the test administration, four sets of 18 trials are implemented. The client counts backward from a specified integer for a specified amount of time. |
| Scoring | The scores are of three types, those for the Easy items or trials (Sets 1 and 2), for the Hard items or trials (Sets 3 and 4), and the total number correct. |
**Waddell Signs** 34,36

<table>
<thead>
<tr>
<th><strong>Purpose</strong></th>
<th>A quick and easy screen to identify patients who necessitate a more thorough psychosocial assessment and predict those with poor outcome with conservative and surgical treatment.</th>
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<tbody>
<tr>
<td><strong>Items</strong></td>
<td>Standardized set of 8 signs divided into 5 categories of “behavioural responses to examination”. 41</td>
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<tr>
<td><strong>Scoring</strong></td>
<td>If an individual scores positive for a single sign, then they are positive for that category. If three or more of the five categories are positive, then the result is clinically significant. Isolated positive signs are disregarded.</td>
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**Nonorganic Signs**
1. Tenderness
   - Superficial
   - Nonanatomic
2. Simulation Tests
   - Axial Loading
   - Rotation
3. Distraction Test
   - Straight Leg Raise
4. Regional Disturbances
   - Weakness
   - Altered sensation
5. Overreaction

**Manual Muscle Test** 44

<table>
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<tr>
<th><strong>Description</strong></th>
<th>Measures variability of repeated isometric strength testing using a dynamometer.</th>
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</table>
| **Coefficient of Variation** | Calculated by dividing the standard deviation (SD) of three or more consecutive trials by their mean and multiplying by 100.  
                         
 CV % = [SD/Mean]*100  |
| **Repetitions** | 3-5 per trial |
| **Interpretation of results** | Submaximal effort is associated with greater variability in performance. A larger CV value thus equates to greater variability and small consistency between repeated trials. CV is compared to a cut-off value and determines if efforts are inconsistent enough to be labeled submaximal and insincere |