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How Is Pain Measured?

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Abstract

This article compares what the Widespread Pain Index (WPI), Symptom Severity Scale (SSS), pressure pain threshold (PPT), quantitative sensory testing (QST), and Revised Fibromyalgia Impact Questionnaire (FIQR) measure. WPI and SSS combine pain distribution over the previous week with the burden of accompanying symptoms; PPT and QST record responses under specified stimulus conditions; and FIQR asks about function, overall impact, and symptoms over the previous seven days. Because the constructs, time windows, test sites, protocols, and decision rules differ, the same person can be classified differently across tools. Such disagreement does not make one value false, and no tool by itself establishes the cause of pain, the validity of symptoms, a single mechanism, or an individual's diagnosis. The different measurement layers should be read together without being collapsed, and future studies need to apply them repeatedly to the same people.

Keywords: fibromyalgia pain measurement · Widespread Pain Index · Symptom Severity Scale · pressure pain threshold · quantitative sensory testing · FIQR · pain assessment

Different Questions, Not One Number

The phrase “how severe is the pain?” blends together at least four questions: How many areas of the body are painful? How much burden comes from fatigue and sleep or cognitive symptoms? When does a specified stimulus become painful? How difficult does the condition make everyday tasks? WPI, SSS, QST, and FIQR divide these questions among them. [1, 2, 3, 4, 5, 6]

Their higher and lower values therefore cannot be placed directly on the same axis. A WPI score of 12, an FIQR function score, and a pressure pain threshold measured in kPa are not the same quantity expressed in different units. One counts the distribution of pain during the previous week, another asks about the impact on daily life over the previous seven days, and another records the point at which sensation becomes painful as pressure is applied at a specified rate to a particular site. [1, 5, 6]

Disagreement among tools should not automatically be read as failure. A person can have pain distributed across many areas, a high symptom burden, a low pressure pain threshold, and relatively preserved performance in some areas of function at the same time. These values do not cancel one another out; they preserve different views of what was observed.

Table 1. The Different Questions Asked by Fibromyalgia Measurement Tools

Tool or method	What does it ask?	Time window or test conditions	What does it produce?	What the result alone cannot establish
Widespread Pain Index (WPI)	How many areas of the body were painful?	The previous week; 19 painful areas. In the 2016 criteria, used with the spatial condition of pain in at least four of five regions.	A 0–19 count of painful areas; one component of the criteria when combined with SSS.	Intensity at each site, evoked-stimulus threshold, functional impairment, the cause of pain, or the entirety of a person's medical condition.
Symptom Severity Scale (SSS)	How burdensome are fatigue, unrefreshing sleep, cognitive symptoms, and other specified symptoms?	Assessment of symptoms specified by the criteria; used in combination with WPI.	A 0–12 score of symptom burden; one component of the criteria when combined with WPI.	The cause of each symptom, degree of functional impairment, responses to evoked stimuli, or an individual diagnosis established by self-scoring alone.
Pressure pain threshold (PPT)	When does controlled pressure become painful?	A test moment affected by the specified site, probe, rate of pressure increase, number of repetitions, and participant instructions.	The pressure value at which the participant reports a transition from pressure to pain.	A fibromyalgia-specific lesion, whether the pain experience is genuine, a single central mechanism, or a stand-alone individual diagnosis.
Quantitative sensory testing (QST)	How does the somatosensory system respond to controlled mechanical and thermal stimuli, including repeated and conditioning stimuli?	Depends on modality, site, stimulus and instructions, algorithm, reference values, age, sex, and clinical context.	Protocol-specific measures such as detection and pain thresholds and evoked, repeated, or modulated responses.	A fibromyalgia biomarker, a single central mechanism, a stand-alone diagnosis of neuropathic pain, or a value shared across all protocols.
Revised Fibromyalgia Impact Questionnaire (FIQR)	How much have function, overall impact, and symptoms affected daily life?	The previous seven days; 21 self-report items.	Function, overall-impact, and symptom domains, plus a total score.	The cause of pain, evoked-stimulus threshold, agreement with WPI, SSS, or QST, or the entirety of one person's long-term change.

Note. WPI, SSS, pressure pain threshold, QST, and FIQR do not express the same pain value in different units. Each row places the target of observation beside the limits of interpretation.

WPI: Where Is the Pain Distributed?

In the 2010 criteria, the WPI records the number of 19 areas that were painful during the previous week, producing a score from 0 to 19. A higher score means that more painful areas were reported. It does not show which area hurt more, how pain at one site varied over a day, or the threshold for an evoked stimulus. [1]

The 2016 revision added a spatial condition to the simple area count. In addition to the combinations of WPI $\geq$7 and SSS $\geq$5, or WPI 4–6 and SSS $\geq$9, pain must be present in at least four of five regions. [2] Two people with the same WPI can therefore differ in whether they meet the criteria, depending on whether their painful areas are clustered on one side or near one another, or are distributed more broadly.

WPI is one component of the symptom pattern required by the criteria, but it is not a test that identifies the cause of pain. The 2010 study acknowledged the lack of an independent standard case definition, and the 2016 criteria likewise stated that they do not define the entirety of a person's medical condition. [1, 2]

SSS: The Symptom Burden Alongside Pain

The 2010 SS scale combined fatigue, unrefreshing sleep, cognitive symptoms, and overall somatic symptom burden into a score from 0 to 12. [1] The 2016 SSS also works with WPI to form the classification threshold. [2] If WPI maps the geography of pain, SSS compresses the burden of symptoms that accompany it into a score.

Because the two scales are combined, they can compensate for one another within the rule. A person with more painful areas can reach a combination threshold with a comparatively lower SSS, whereas a person with a WPI of 4–6 needs a higher SSS. [2] Two people with the same number of painful areas can therefore be classified differently depending on the burden of fatigue, sleep, and cognitive symptoms.

A high SSS alone, however, does not establish the cause of fatigue or sleep problems. The criteria specify observable items and a combination rule. The self-report version may be used in research, but it does not by itself establish an individual's clinical diagnosis; physician-applied criteria also need to be used as part of an overall medical assessment. [2]

Pressure Pain Threshold: The Point Where Pressure Becomes Painful

Pressure pain threshold (PPT) does not ask about the number of painful areas or daily function. An algometer is applied to the skin and underlying tissue while pressure is increased, and the point at which the participant reports that “pressure” has changed to “pressure and pain” is recorded. In the Tampin study, pressure was increased at 50 kPa per second with a 1 cm^2 probe, and the mean of three measurements was analyzed. [5]

The result is neither a purely mechanical reading nor simply a questionnaire score. The equipment controls the stimulus intensity and rate, but the participant's perception and response determine the transition point. Comparability can change even among tests called PPT when the test site, probe, rate of pressure increase, number of repetitions, or instructions differ. [3, 4, 5]

A lower PPT means that pain was reported at a lower pressure under those conditions. By itself, it does not establish a fibromyalgia-specific lesion, whether the pain is genuine, or a single central mechanism. PPT is one of several evoked-response measures that QST can produce. [3, 4]

QST: Responses to Controlled Stimuli

QST is a psychophysical method that quantifies somatosensory responses to controlled mechanical and thermal stimuli. [3, 4] Beyond pressure pain threshold, it can include cold and heat pain thresholds, detection thresholds for touch and vibration, responses to repeated stimuli, and pain modulation under a conditioning stimulus. [3, 5]

Which tests are combined, where they are performed, and in what sequence are all part of interpreting the results. A 2025 scoping review screened 2,512 records and included 126 studies, but found that a common protocol was not used consistently and that test sites and test types varied. [3] The NeuPSIG

consensus statement likewise called for prespecified standardized stimuli and instructions, validated algorithms, reference values adjusted for site, age, and sex, and interpretation within the clinical context. [4]

QST therefore adds information about the functional state shown by the sensory system under specific test conditions, but it is not an independent final arbiter. The NeuPSIG statement did not recommend QST as a stand-alone diagnostic test for neuropathic pain, [4] and the fibromyalgia scoping review reported that protocol heterogeneity limits evidence synthesis and biomarker interpretation. [3]

Functional Scales: The Impact Pain Leaves on Daily Life

The Revised Fibromyalgia Impact Questionnaire (FIQR) records function, overall impact, and symptoms over the previous seven days in 21 items. [6] Its function domain asks how difficult everyday tasks such as shopping, climbing stairs, and preparing meals have been. It quantifies “what has become difficult to do,” a question that WPI and PPT do not answer.

In the 2009 validation study, the three FIQR domains correlated at 0.69–0.88 with the corresponding domains of the earlier FIQ. [6] This is group-level convergent evidence that the new instrument's domains moved with related domains in the earlier questionnaire. It is not evidence that FIQR agrees with WPI, SSS, or QST, nor that it identifies the cause of functional impairment.

The limits of the validation also matter. The study did not directly assess test-retest reliability among online participants, included only 12 men, and could not calculate responsiveness or the minimal clinically important difference. [6] A functional score summarizes impact within a specified time window, but it does not capture every condition under which an individual is active or all long-term change.

Why the Same Patient Can Be Classified Differently

First, the targets of measurement differ. WPI records the number of painful areas, SSS the burden of accompanying symptoms, PPT and QST responses to evoked stimuli, and FIQR the impact on daily life. Second, time and space differ. A questionnaire recalling the previous week and a response obtained from a specific site during one laboratory visit are not the same observation. [1, 2, 3, 4, 5, 6]

Third, the decision rules differ. The criteria use combination thresholds for WPI and SSS together with pain regions; [2] PPT uses the moment at which pressure becomes painful; [5] QST relies on reference populations and test protocols; [4] and FIQR combines multiple items into domains and a total score. [6] Values near a boundary can be classified differently depending on which rule is applied.

A small comparative study makes this distinction visible in practice. Among 22 participants with fibromyalgia, sensory descriptors on painDETECT did not consistently correspond to the matching QST measures at the area of maximum pain. [5] This does not show that all self-report measures disagree with QST. It is a finding from a specific questionnaire, a specific site, and a small sample, and it establishes neither why the measures differed nor which one represents a “true value.”

Read Them Together Without Collapsing Them

The purpose of using these tools together is not to choose a winner. WPI and SSS add the breadth and burden of the symptom pattern, PPT and other QST measures add evoked responses, and FIQR adds function and impact on daily life. Preserving these different layers is what allows us to distinguish differences hidden within the same score from genuine connections between different scores.

Disagreement is a signal to reassess, not a reason to erase a person's experience. The first questions are whether the tools asked the same thing, covered the same period and sites, and used the same reference values and thresholds. Differences that remain can then become research questions about individual change, measurement variability, and differences among the constructs captured by each tool. [3, 4, 5, 6]

The current evidence did not repeatedly apply these tools to the same people along the same timeline to compare their trajectories. The next step is to track WPI and SSS, function, activity and symptom diaries, and standardized QST together, asking which changes move together and which diverge. This is not an established conclusion. It is the question that remains if we want to determine why different tools produce different answers.

Declarations

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Ethics	Only public literature was used; no individual patient data or clinical intervention was involved. Any future human-participant research requires separate ethics review before it begins.

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