Review

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Abstract: Background/Objectives: Quantitative Sensory Testing (QST) is one of the most reliable methods for assessing Fibromyalgia Syndrome (FMS). Despite its importance, there are still controversies regarding the correct interpretation of evoked responses, as they may vary depending on the protocol, individual characteristics, disease severity, and other factors. This study aims to examine how QST has been applied as an outcome measure in FMS. **Methods**: We considered three databases (Medline, Embase, and Web of Science) until June 2024. From a total of 2,512 studies, 126 (39 RCTs and 87 non-RCTs) were selected for full reading after assessment for risk of bias and eligibility criteria. These criteria included at least one type of QST and a clear diagnosis of fibromyalgia (FMS). **Results**: Results highlighted a lack of standardization in QST, as no reported protocols were followed and there was no specific number of tender points tested for FMS. Additionally, there was inconsistency in the selection of sites and types of tests conducted. **Conclusions**: This heterogeneity in methodology may affect the comparability and interpretation of results, underscoring the urgent need for standardized guidelines for conducting QST in fibromyalgia studies. A clear understanding of how QST has been measured could prompt a reevaluation of current approaches to FMS assessment, leading to more accurate interpretations and, ultimately, improved management of this complex condition.

Keywords: quantitative sensory testing; fibromyalgia; pain measurement; CPM; temporal summation; sensory function

1. Introduction

Characterized as a widespread chronic pain syndrome, Fibromyalgia Syndrome (FMS) has a complex multifactorial etiopathogenesis that remains not fully understood." [1,2] and affects 3 to 6% of global population [3]. FMS is often associated with impairments in mental health and quality of life [4–7].

Since 1980, various FMS diagnostic criteria have been developed to reduce subjective clinical judgment, most notably the American College of Rheumatology (ACR), which consider FMS diagnosis as a combined score of the Widespread Pain Index (WPI) and Symptom Severity Scale (SSS) [5]. In this context, Quantitative Sensory Testing (QST) has emerged to improve the precision of sensory deficit detection in FMS by assessing pain thresholds through a combination of static and dynamic protocols that allows the assessment of pain thresholds through isolated stimuli, measuring hyperalgesia or hypoalgesia in specific areas and the perception of pain.

QST is based on measurements of responses to calibrated, graded innocuous or noxious stimuli (generally mechanical or thermal) [8–10]. Despite its potential, its implementation can be complex due to cost and protocol selection [11,12]. In FMS, QST protocol variability combined with individual differences and comorbidities, can hinder the interpretation of evoked responses [13]. This lack of standardization impedes understanding, comparison of studies, and development of effective diagnostic and therapeutic strategies [10].

Equivalent difficulties have been observed in other chronic pain conditions, already postulated for previous reviews [14,15]. In brief, the use of QST for painful experiences demonstrated the need for a more standardized approach [14,15]. QST standardization issues, including test site variability and inconsistent definitions, have been reported in other chronic pain conditions like knee osteoarthritis [16] and pediatric populations [17], highlighting the need for consistent protocols to improve reproducibility and clinical applicability [17]. This heterogeneity compromises QST's potential in chronic pain research, including fibromyalgia [18].

Therefore, despite favorable evidence for QST application, there are no previous studies debating the implications of QST protocols in FMS. In this sense, this scoping review aims to clarify the complexities and variations inherent in QST methodologies in FMS. By examining QST protocols and identifying factors that influence their reliability as outcome measures, we believe it will be possible to develop more effective approaches for fibromyalgia syndrome (FMS).

2. Materials and Methods

This scoping review protocol was developed based on the Preferred Reporting Items for Systematic Reviews and Metanalysis Extension for Scoping Reviews, PRISMA-ScR [19] (Suppl. Material 1). The protocol was previously registered (DOI 10.17605/OSF.IO/UN69V).

2.1. Eligibility Criteria

This study considered studies where participants were adults, both sexes, aged 18+ with a clear diagnosis of Fibromyalgia Syndrome- FMS considering any of the ACR criteria. As we are looking for Quantitative Sensory Testing-QST measurement, studies with at least one measure of pain threshold or sensitivity (any study design), were selected. We excluded studies if they had less than 50% of the participants with FMS.   Duplicates, reviews, and commentaries on findings from other studies or documents that were not the primary research (for example, conference abstracts) were also excluded.

2.2. Search

This review extracted studies from the following databases: Pubmed (n=508), Embase (n=817), and Web of Science (n=1187). We replicated the primary database search terms (Pubmed) for the others (see Supplementary Material 2). The search was not limited by language or year. The search was made up to June 31, 2024.

2.3. Selection of Sources of Evidence and Critical Appraisal

The quality of the included studies was assessed by two independent reviewers (AMC and VAS), and disagreements will be solved by a third reviewer (MGS). For the RCTs, the ROB 2 tool was used, and for the non-RCTs, the STROBE (see Suppl. Material 3 and 4).

2.4. Data Charting Process

The Rayyan software [20] was used to select studies by title and abstract. It was made by two independent reviewers (AMC and VAS) based on our previously established inclusion/exclusion criteria. The third reviewer (MGS) remained on standby if needed. After a full reading, data were extracted from papers by AMC and VAS using an extraction table developed by the reviewers, independently. In cases where it is not possible, we search for the data protocol or other similar

studies made by the author/group, in order to clarify the information. In our study, it was not necessary to consult the authors.

2.5. Data items and Synthesis of Results

For extraction, we considered the study design, quality of the study, sample characteristics, age, sex, distribution, inclusion criteria, diagnosis, type of QST (static or dynamic), and methods applied by the studies. We also got information from other measurements and main conclusions. The data was tabulated and presented in a narrative way, answering the research objectives.

3. Results

The search (up to June 2024) yielded 2512 records, of which 1542 remained after duplicate removal. Following title/abstract screening and full-text review, 126 studies (39 RCTs, 87 non-RCTs) were included (Figure 1). Most participants were women aged 40-59. Participant characteristics (age, gender, study design, diagnostic criteria, QST) are shown in Table 1.
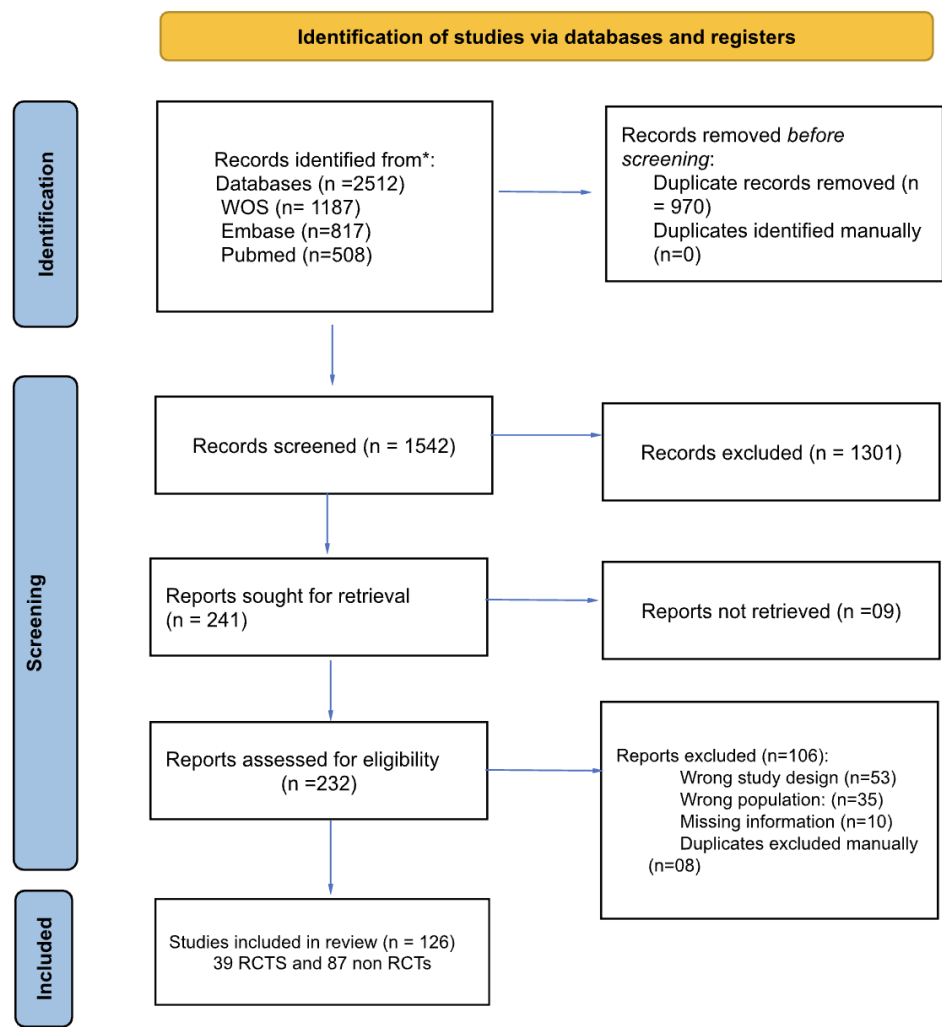

Figure 1. Study flow chart.

Table 1. Characterization of the studies using QST methods in patients with FMS from the retrieved studies (n= 126).

Author, Year	Design	ACR Diagnostic Criteria	Arms	Total Females (%)	Age Mean (SD)	QST Static	QST Dynamic
Sorensen, 1995	Non RCT	1990	3	100	47.5 (7.5)	Yes	No
Kosek, 1997	Non RCT	1990	2	100	42.5 (28.5)	Yes	No
Ernberg, 1997	Non RCT	1990	2	92	48.5 (14.3)	Yes	No
Hurtig, 2001	Non RCT	1990	2	100	43 (37.9)	Yes	No
Price, 2002	Non RCT	1990	2	100	45.5 (12.5)	No	Yes
Desmeules, 2003	Non RCT	1990	2	88	48.3 (10.3)	Yes	No
Staud, 2003	Non RCT	1990	1	87.3	49.9 (10.4)	No	Yes
Ernberg, 2003	Non RCT	1990	2	92	48.5 (14.3)	Yes	No
Kendall, 2003	Non RCT	1990	3	100	43.6 (7.3)	Yes	No
Yildiz, 2004	RCT	1990	2	70	40.1 (4.7)	Yes	No
Staud, 2004	Non RCT	1990	2	100	42.9 (13.04)	Yes	No
Staud, 2004	Non RCT	1990	1	94.6	49.6 (11.5)	Yes	No
Giesecke, 2005	Non RCT	1990	2	62.3	40.2 (9)	Yes	No
Montoya, 2005	Non RCT	1990	2	100	51.6 (5.9)	Yes	No
Staud, 2005	Non RCT	1990	2	100	47.05 (8.7)	Yes	No
Geisser, 2007	Non RCT	1990	3	100	39.6 (9.2)	Yes	No
Jespersen, 2007	Non RCT	1990	2	100	47 (6.08)	Yes	No
Smith, 2008	Non RCT	1990	2	100	48 (6.8)	Yes	No
Targino, 2008	RCT	1990	2	100	51.6 (11.07)	Yes	No
Diers, 2008	Non RCT	1990	2	86.7	50.4(9.5)	Yes	No
Staud, 2008	Non RCT	1990	2	100	43.15 (9)	No	Yes
Suman, 2009	Non RCT	1990	2	100	44.8 (11.7)	Yes	No
Ge, 2009	Non RCT	1990	2	100	53 (2.4)	Yes	No
Stening, 2010	RCT	1990	2	100	54.3 (3.4)	Yes	No
Nelson, 2010	RCT	1990	2	100	51.7 (10.3)	Yes	No
Tastekin, 2010	Non RCT	1990	2	100	42.7 (6.7)	Yes	No
de Bruijn, 2011	Non RCT	1990	1	100	37.3 (7.7)	Yes	No
Hassett, 2012	Non RCT	1990	2	100	41.1 (10.8)	Yes	No
Martínez-Jauand, 2012	Non RCT	1990	2	100	50.5 (9.4)	Yes	No
Paul-Savoie, 2012	Non RCT	1990	2	100	49.8 (9.3)	Yes	Yes
Hargrove, 2012	RCT	1990	2	92.2	52.6 (3.1)	Yes	No
Hooten, 2012	RCT	1990	2	90.3	46.5 (10.8)	Yes	No
Hassett, 2012	Non RCT	1990	2	100	38.8 (11.7)	Yes	No
Castro-Sanchez, 2012	Non RCT	1990	2	50	52 (5.5)	Yes	No
Burgmer, 2012	Non RCT	1990	2	100	52.59 (7.95)	Yes	No
Van Oosterwijck, 2013	RCT	1990	2	80	45.8 (10.9)	Yes	No
Üçeyler, 2013	Non RCT	1990	2	91.42	56.4 (28.9)	Yes	No
Crettaz, 2013	Non RCT	1990	2	100	40.2 (9.2)	Yes	Yes
Da Silva, 2013	Non RCT	1990	2	96	49.9 (14.5)	Yes	Yes
Casanueva, 2013	RCT	1990	2	100	53.7 (10.8)	Yes	No
Belenguer-Prieto, 2013	Non RCT	1990	2	96.7	50.8 (7.8)	Yes	No
Staud, 2014	RCT	1990	3	100	45.8 (14.8)	Yes	No
Bokarewa, 2014	Non RCT	1990	3	100	51 (2.5)	Yes	No
Castro-Sanchez, 2014	RCT	1990	2	54	53.5(7.5)	Yes	No
Staud, 2014	Non RCT	1990	2	100	45.8 (14.8)	Yes	No
Vandenbroucke, 2014	Non RCT	2010	2	94.8	39 (11.7)	Yes	No
Staud, 2015	RCT	1990	2	91.80	47.2 (12)	Yes	No
Qin, 2015	Non RCT	1990	2	86.05	45(9.5)	Yes	No
Soriano-Maldonado, 2015	Non RCT	1990	1	100	48.3 (7.8)	Yes	No

Kin, 2015	Non RCT	2010	2	84	44,6 (13.08)	Yes	No
Zamuner, 2015	Non RCT	1990	2	100	47.07 (7)	Yes	No
Efrati, 2015	RCT	1990	2	100	49.2 (11)	Yes	No
Oudejans, 2016	RCT	1990	1	92.31	39.2 (60.1)	Yes	Yes
Potvin, 2016	Non RCT	1990	2	93.41	49.5 (8.2)	Yes	Yes
Schoen, 2016	Non RCT	1990	2	100	42.7 (10.8)	Yes	Yes
Barbero, 2017	Non RCT	1990/2010	1	100	49.5 (8.1)	Yes	No
Forti, 2016	Non RCT	1990	2	100	48.9 (7.2)	Yes	No
Gomez-Perretta, 2016	Non RCT	1990	2	100	46.2 (10.5)	Yes	No
Saral, 2016	RCT	1990	3	100	41.7 (7.7)	Yes	No
Mendonça, 2016	RCT	2010	3	97.8	19.5 (8.19)	Yes	No
Luciano, 2016	RCT	1990	1	100	57.28 (8.81)	Yes	No
Gerhardta, 2017	Non RCT	1990	3	72.88	56.8 (10)	Yes	Yes
de la Coba, 2017	Non RCT	1990	2	100	53.09 (9.38)	No	Yes
Freitas, 2017	Non RCT	1990	2	100	53.03(10.2)	Yes	No
Baumueller, 2017	RCT	1990	2	100	55.6 (6.1)	Yes	No
Harper, 2018	Non RCT	1990	2	100	40.7 (11.2)	No	Yes
Pickering, 2018	RCT	2010	2	100	46.7 (10.6)	Yes	Yes
Merriwether, 2018	Non RCT	1990	1	100	49.3 (11.5)	Yes	Yes
Wodehouse, 2018	Non RCT	1990/2010	1	92.8	46.7(10.5)	Yes	Yes
Albers, 2018	RCT	1990	3	100	55.4 (11.9)	Yes	No
Galvez-Sanchez, 2018	Non RCT	2010	2	100	49.02(8.2)	Yes	No
Eken, 2018	Non RCT	1990	2	94	36.9 (7.5)	Yes	No
de la Coba, 2018	Non RCT	1990	2	100	53.09 (10.4)	No	Yes
Evdokimov, 2019	Non RCT	1990/2010	2	100	52 (15.8)	Yes	Yes
Brietzke, 2019	Non RCT	2010	2	100	42.2 (7.1)	Yes	Yes
Amer-Cuenca, 2019	RCT	1990/2010	4	100	53.2 (9)	Yes	Yes
Donk, 2019	RCT	2010	2	94.1	44.5 (22.6)	Yes	Yes
Andrade, 2019	RCT	1990	2	100	51.9 (8)	Yes	No
Udina-Cortés, 2020	RCT	2010	2	100	52 (8.8)	Yes	Yes
Uygur-Kucukseymena, 2020	Non RCT	2010	1	88.5	53(13.52)	No	Yes
Kaziyama, 2020	Non RCT	2010	2	100	44.4 (6.3)	Yes	No
Pickering, 2020	Non RCT	2016	2	100	51 (9.6)	Yes	No
Sarmento, 2020	RCT	2010	2	100	48.8 (11.4)	Yes	No
Yuan, 2020	Non RCT	1990	2	97	51.07 (8.16)	Yes	No
Han, 2020	Non RCT	2010	2	97	52 (8.74)	Yes	No
Izquierdo-Alventosa, 2020	RCT	2016	2	100	54 (7.9)	Yes	No
Rehm, 2021	Non RCT	1990	1	95.5	50.4 (9.6)	Yes	No
Falaguera-Vera, 2020	Non RCT	1990/2010	2	100	55.6 (7.2)	Yes	No
Staud, 2021	Non RCT	1990	2	100	48 (11.9)	Yes	No
Jamison, 2021	RCT	2010	2	100	50.4 (13.5)	Yes	Yes
Jamison, 2021	RCT	2010	2	93.3	50.3 (13.5)	Yes	Yes
Soldatelli, 2021	Non RCT	2010/2016	2	100	49.3 (8.6)	Yes	Yes
Karamanlioglu, 2021	RCT	2010	2	100	43.7 (8.1)	Yes	No
Izquierdo-Alventosa, 2021	RCT	2016	3	100	52.8 (8.2)	Yes	No
Van Campen, 2021	Non RCT	2010	3	100	39.6 (12.3)	Yes	Yes
Weber, 2022	Non RCT	2016	2	81	49.9 (8.4)	Yes	Yes
Pacheco-Barrios, 2022	Non RCT	2010	1	86.21	47.6 (11.5)	Yes	Yes
De Paula, 2022	RCT	2016	4	100	49.3 (2.1)	Yes	Yes
Tour, 2022	Non RCT	1990	2	100	47.5 (7.8)	Yes	Yes
Serrano, 2022	Non RCT	2016	2	100	48.2 (9.8)	Yes	Yes
Alsouhibani, 2022	RCT	2010	2	88.4	49.8 (14.4)	Yes	Yes

Franco, 2022	Non RCT	2016	2	100	49.9 (10)	No	Yes
Samartin-Veiga, 2022	RCT	2010	4	100	50.2 (8.7)	Yes	No
Lin, 2022	RCT	2016	2	100	48.5 (13.02)	Yes	No
Castelo-Branco, 2022	Non RCT	2010	4	87.8	48.8 (10.1)	No	Yes
Berwick, 2022	Non RCT	1990/2010		90	49.4 (10.6)	Yes	No
Fanton, 2022	Non RCT	1990/2010		100	47.6 (7.7)	Yes	No
Ablin, 2023	RCT	2016	2	79.3	45.1 (12.3)	Yes	Yes
Berardi, 2023	RCT	1990	4	100	48.7 (11.7)	Yes	Yes
Cigaran-Mendez, 2023	Non RCT	1990/2010	2	100	52.5(11)	Yes	Yes
Soldatelli, 2023	Non RCT	1990	2	100	49.6 (7.7)	No	Yes
Leone, 2023	Non RCT	2016	3	88.30	49.1 (11.7)	Yes	Yes
Bao, 2023	RCT	2016	3	100	43.6 (14.3)	No	Yes
Kumar, 2023	Non RCT	2010	1	100	35.1 (8.9)	Yes	No
Tapia-Haro, 2023	Non RCT	2010	1	100	56.06 (6.41)	Yes	No
Sanzo, 2024	RCT	2010	2	100	52.07(2.28)	Yes	Yes
Baumler, 2024	Non RCT	2010/2016	2	100	54.9(13.02)	Yes	No
Neira, 2024	Non RCT	1990/2010	2	100	50 (9)	Yes	No
Marshall, 2024	Non RCT	2016	3	93	45.4 (15.0)	Yes	No
Boussi-Gross, 2024	RCT	2016	2	100	33.3 (5.9)	Yes	Yes
Coupel, 2024	Non RCT	2010	2	98.2	50.91 (10.04)	Yes	No
Berardi, 2024	RCT	1990	4	100	49.05 (11.6)	Yes	Yes
Aoe, 2024	Non RCT	2016	2	90	42.4 (11.1)	Yes	No
Castelo-Branco, 2024	Non RCT	2010	1	86.5	48.08 (11.12)	No	Yes
Gil-Ugidos, 2024	Non RCT	2010	1	100	56.06 (6.41)	Yes	No
Gungormus,2024	RCT	2016	2	100	54.5 (7.5)	Yes	Yes

American College of Rheumatology (ACR), Standard Deviation (SD), Quantitative Sensory Testing (QST).

3.1. Quality Assessment

Only studies classified as having a low risk of bias or some concerns were considered, and 30(76.9%) RCTs and 59(67.81%) non RCT's studies met this criterion. RCT limitations involved lack of information regarding the original protocol and data analysis plan (Supplementary Material 3). In terms of nonRCTs, limitations were related to sample (i.e., recruitment, inclusion, sample size calculation), generalizability and insufficient information regarding sample size and bias (Supplementary Material 4).

3.2. Narrative Synthesis of Quantitative Sensory Testing Methods

A total of 42.9% of studies included both static and dynamic QST assessments, offering a comprehensive approach to sensory evaluation. (Table 2). For those, we divided our results considering both assessments.

Table 2. Summary of Static and Dynamic Quantitative Sensory Testing Across Body Locations.

Test Category	Testing Location	Test Category	Testing Location
Static Quantitative Sensory Testing		*Dynamic Quantitative Sensory Testing*	
Mechanical Detection, Pain threshold or Mechanical Pain Sensitivity	Forearm [n=3] Hands [n=4] Variable [n=3]	Windup and Temporal Summation - Mechanical or Thermal	Forearm [n=4] Hands [n=7] Foots [n=1] Variable [n=3]
Pressure Pain Threshold (PPT)	Forearm [n=5] Hands [n=17] Trapezius [n=8]	Conditioned Pain Modulation (CPM)	Forearm [n=12] Hands [n=4] Foots [n=2]

Test Category	Testing Location	Test Category	Testing Location
	18 tender points [n=24]		Variable [n=8]
	Variable [n=30]		
Cold Pain Threshold or Cold Pain Tolerance	Forearm [n=2]		
	Hands [n=9]		
	Variable [n=5]		
Heat Pain Threshold or Tolerance	Forearm [n=7]		
	Hands [n=6]		
	Variable [n=7]		

This table presents a summary of key findings from quantitative sensory testing, with a particular emphasis on the primary body locations targeted in these assessments. The left section of the table summarizes static sensory tests, such as mechanical and thermal detection/pain thresholds and pressure pain thresholds, while the right section focuses on dynamic sensory tests, including temporal summation and conditioned pain modulation. It should be noted that the referenced numbers correspond to studies that provide further detail on the test results for each specified location.

3.3. Static QST

Static QST methods comprised 76% of all assessments. Pressure pain thresholds/tolerances (PPTh/PPT) were the most frequently measured (n=84), predominantly at 18 tender points (n=24), hands (n=17), trapezius (n=8), and forearm (n=5), using primarily the Somac algometer (n=54). Mechanical detection/pain thresholds/sensitivity (MDTh/MPTh/MPS, n=10) were assessed mainly at the forearm (n=3) and hands (n=4), often with Von Frey monofilaments (n=5). Thermal pain thresholds/tolerances (TPTh/TPT, n=36) were typically measured at hands (n=9) and forearm (n=7), often with the TSA II Medoc.

3.4. Dynamic QST

Dynamic QST methods constituted 24% of assessments. Temporal Summation (TS, n=15) was primarily assessed at hands (n=7) and forearm (n=4). Conditioned Pain Modulation (CPM, n=26) was frequently tested at forearm (n=12) and hands (n=4), using PPT as the test stimulus and a cold water immersion as the conditioned stimulus.

4. Discussion

This scoping review examined how QST is used in FMS, a complex condition with widespread pain and variable symptom presentation, that per se makes diagnosis and measurement challenging[11,12]. While QST offers a potential surrogate measure to improve pain assessment reliability and validity, and understand neuropathic pain[4,21], this review revealed important methodological issues.

Although static QST is prevalent, variations in body location, stimulus duration, and intensity may affect results. González-Álvarez (2024) demonstrated PPT and CPM variability across test points, reflecting altered pain modulation in FMS. Given the diffuse pain and altered sensation characteristic of FMS, QST at remote sites may reinforce information regarding the central nervous system. The NeuPSIG consensus[10] reinforces the use of multiple test sites, or preferably standardizing test locations in order to improve the accuracy and interpretation by reducing variability and potentially revealing more consistent patterns of somatosensory dysfunction in FMS.

Given the scarcity of studies measuring QST both before and after interventions, QST stability in FMS remains poorly understood. No consistent information regarding the presence of other symptoms was controlled (e.g., sleep disturbances and other non-physical symptoms), neither the impact of psychological factors, the presence of psychopathology or neuropathic pain conditions[14,16]. There is an amount of literature available claiming for a more controlled information of those variables, once they are related to the severity of this disease[5–7]. Further research should explore how internal and external factors contribute to FMS progression[22].

Consequently, despite efforts to minimize bias, the generalizability of findings remains limited due to substantial methodological variation.

The diversity in test locations—from high muscle areas (e.g., trapezius, deltoid) to minimal muscle sites (e.g., wrist, thumbnail)—further adds to this heterogeneity. This inconsistency could limit the synthesis of findings across studies and impact the reliability of QST as a biomarker in FMS. Standardization in test locations and stimuli parameters could facilitate future meta-analyses and enhance the clinical applicability of QST.

Furthermore, QST modality definitions might be implicit. For example, while TS and CPM are often used as measures of central sensitization, they also involve the peripheral nervous system – the parameters of the sensitization analysis must be defined to each study. Additional limitations include variability in test parameters (number of tests, duration, rest intervals, stimulus intensity/increment) and equipment. Despite recommended protocols, application remains uncommon, hindering full standardization in this review.

Each of these factors can introduce variations between studies; despite there being recommended standardized protocols and methods, our findings show that their application is not yet common. In our review, even when controlling this information, it was not possible to standardize fully across studies.

Finally, as a strength, this is one of the first studies to recruit the state of art by considering QST measures in FMS. We hope that this scoping review might be able to summarize the need for a more standardized approach to measuring FMS, particularly considering the complex and unpredictable nature of endogenous pain inhibition mechanisms.

5. Conclusions

While promising for FMS assessment, QST's potential is hampered by significant lack of information regarding its validity and reliability. Future research should stratify studies by treatment modality (e.g., pharmacological vs. neuromodulatory) to elucidate treatment-specific effects and optimize patient care. Addressing these gaps promises to significantly advance FMS understanding and improve patient outcomes.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Abbreviations

The following abbreviations are used in this manuscript:

FMS	Fibromyalgia Syndrome
QST	Quantitative Sensory Testing
ACR	American College of Rheumatology
VAS	Visual Analog Scale
PPTh/PPT	Pressure Pain Threshold/Tolerance
MDTh/MPTh/MPS	Mechanical Detection/Pain Thresholds/Sensitivity
TPTh/TPT	Thermal Pain Threshold/Tolerance
TS	Temporal Summation
CPM	Conditioned Pain Modulation
RCT	Randomized Controlled Trial
ROB 2	Risk of Bias Tool 2
PRISMA-ScR	Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews

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