STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2	Abstract: "In this cross-sectional study, 36 MPS patients and 35 asymptomatic controls ..."
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2	Abstract: describes background, methods (MVC, sustained contraction, HD-sEMG topography), main results (distance 11.3±5.2 mm, displacement 9.0 vs 21.7 mm, amplitude differences), and conclusion.
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3-5	Introduction (Page 3-5): describes MPS pathophysiology, limitations of palpation, potential of HD-sEMG for mapping innervation zone dysfunction.
Objectives	3	State specific objectives, including any prespecified hypotheses	5	Page 5, lines 15-22: "We hypothesized that the location of tenderness may correspond to the muscle activity distribution ... and that there would be differences in muscle activity distribution between MPS patients and healthy participants."

Methods				
Study design	4	Present key elements of study design early in the paper	17	Page 17, "Study design": "This cross-sectional study was conducted ... reported following STROBE guidelines."
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	17	Page 17: "Department of Rehabilitation Medicine Center of West China Hospital Sichuan University from January 2024 to December 2024."
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	17-18	Page 17-18, "Participants": detailed inclusion/exclusion criteria for MPS patients and asymptomatic controls; recruitment method (randomly recruited).
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	/	Not applicable
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	18, 22-23	Outcome: distance between low-energy centroid and palpated MTrP (Page 23), centroid displacement (Page 23). Exposure: MPS diagnosis (Page 17-18). Confounders: age, sex matched (Page 17).
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	18-21	VAS and ODI (Page 18). HD-sEMG acquisition (Page 20-21). MTrP palpation (Page

				19). Same methods used for both groups.
Bias	9	Describe any efforts to address potential sources of bias	15, 19	Palpation by single experienced physiotherapist with standardized protocol (Page 19). Limitations discuss operator dependency (Page 15).
Study size	10	Explain how the study size was arrived at	18	Page 18, "Sample size": G*Power calculation, effect size d=1.0, α=0.05, power=0.85 → 17 per group, inflated to ≥22, final 36 & 35.
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	22-23	RMS values, interpolation to 1000×1000, high-energy (≥75th percentile) and low-energy (≤25th percentile) regions defined. Centroid calculation via weighted average.
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	24-25	Non-parametric tests (Mann-Whitney U, Wilcoxon signed-rank) due to non-normality and heteroscedasticity. Pearson correlation. No multivariable adjustment (groups similar at baseline, Table 1).
		(*b*) Describe any methods used to examine subgroups and interactions	/	Not applicable
		(*c*) Explain how missing data were addressed	/	Not applicable
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed	/	Not applicable

		Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy		
		(*e*) Describe any sensitivity analyses	/	Not applicable
Results				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6	Page 6: "HD-sEMG data of 36 participants with unilateral lumbar MPS and 35 asymptomatic participants (CTR) were analyzed." No flow diagram.
		(b) Give reasons for non-participation at each stage	/	Not reported.
		(c) Consider use of a flow diagram	/	Not included.
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6	Table 1 (Page 6): age, height, weight, BMI, pain duration, VAS, ODI, task duration.
		(b) Indicate number of participants with missing data for each variable of interest	/	Not reported.
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)	/	Not applicable
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	/	Not applicable
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	/	Not applicable
		Cross-sectional study—Report numbers of outcome events or summary measures	6-11	Distance error 11.3±5.2 mm (Page 7-8). Centroid displacement: high-energy MPS 9.0±4.3 mm vs CTR 21.7±9.4 mm (Page 10). Amplitude values for low- and high-energy regions across phases (Page 10-11).
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-11	Estimates are unadjusted (Mann-Whitney U, Wilcoxon). No adjusted models. Baseline confounders not significantly different (Table 1).

		(*b*) Report category boundaries when continuous variables were categorized	22	Low-energy region: ≤25th percentile; high-energy region: ≥75th percentile of interpolated RMS matrix.
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period		
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-11	See Item 15. Continuous outcome measures summarised as mean±SD.
Discussion				
Key results	18	Summarise key results with reference to study objectives	12	Page 12, lines 2-9: three key findings (HD-sEMG identifies IZ; spatial adjacency 11.3 mm; impaired redistribution during fatigue).
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15-16	Page 15-16: sample size, single MTrP, palpation subjectivity, electrode shape, no depth information, etc.
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	16	Conclusion (Page 16): HD-sEMG confirms spatial adjacency but not perfect overlap; potential for targeted therapy; need integration with ultrasound.
Generalisability	21	Discuss the generalisability (external validity) of the study results	/	Not applicable
Other information				
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	25	Page 25, "Funding": lists multiple grants (e.g., #ZYYC22001, #RGPIN-04137-2016). Role of funders not stated. Page 25, "Availability of data and

		materials": "To request a copy of the data ... please contact the corresponding author."

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.