Author's response to reviews

Title: Reliability of clinical tests to evaluate nerve function and mechanosensitivity of the upper limb peripheral nervous system

Authors:

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Author's response to reviews: see over
Article submission

Dear Dr. Norton

We would like to thank the Editor and the Editorial Board for the selection of the reviewers since they are all experts in the field of our study. Moreover, we would like to thank the reviewers for their constructive comments.

As you can see in the attached point-by-point reply, we have addressed all minor revisions suggested by the reviewers. The reviewers’ points are listed in the left column and the according changes can be found in the right column.

Thank you for considering our revision for publication in BMC Musculoskeletal. We look forward to hearing from you.

Yours truly,

Annina Schmid

On behalf of the co-authors:
Florian Brunner Hannu Luomajoki Ulrike Held
Sabine Küenzer Lucas M. Bachmann
Michel Coppieters
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<th>#</th>
<th>Reviewer 1, Toby Hall</th>
<th>Our reply</th>
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<tr>
<td>1</td>
<td>I would like to congratulate the authors of this paper for their efforts to pursue research related to clinical practice….</td>
<td>Thank you. No reply required.</td>
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<td>2</td>
<td>The title could better reflect the nature of the study. I suggest … “Reliability of clinical tests to evaluate conductivity and mechanosensitivity of the upper limb peripheral nervous system”</td>
<td>We revised the title according to this point as well as to the suggestions by the third reviewer. The revised title now reads: “Reliability of clinical tests to evaluate nerve function and mechanosensitivity of the upper limb peripheral nervous system”</td>
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<td>I am unsure as to the purpose or usefulness of statistically comparing the reliability statistics between nerve conduction and nerve mechanosensitivity. I cannot see how this adds anything to the paper. Either I missed something or the authors need to explain why they did this. Does the reliability of nerve conduction, more than mechanosensitivity have any advantage?</td>
<td>In our opinion, tests for mechanosensitivity of the upper limb nervous system are not as widely used as tests for afferent/efferent nerve function. This might be due to the complexity of the manoeuvres which may impact on their reliability. We think that a comparable satisfactory reliability of these tests might lower the concerns about the complexity of the manoeuvres and further justifies their use in clinical practice. To clarify this comparison, we added the following sentence (page 6, paragraph 4): <strong>Although ULNTs are the equivalent of the straight leg raise for the upper limb, ULNTs are in our opinion less commonly used and not as frequently performed as the bedside neurological examination. This might be due to the fact that ULNTs are somewhat more complex to perform, which may impact on their reliability. To put the tests for mechanosensitivity in perspective, a comparison with the reliability of the clinical tests for afferent and efferent nerve function was made.</strong></td>
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The authors should incorporate some very brief discussion of the validity of the clinical tests they used in the discussion section. Reliability is an important aspect of any clinical test but test validity is equally important. Some mention was made in the conclusion about diagnostic merit but for example what is the validity of the bedside neurological examination? A test may be reliable but if it is not valid then it’s value is diminished.

We agree that both reliability and validity are important clinometric properties of a test. Interestingly though, we could not identify studies on the validity of the bedside neurological examination in patients with musculoskeletal disorders in comparison with electrodiagnostic tests despite the fact that bedside neurological examination is well established in the medical world. We therefore added a short paragraph (page 15, paragraph 2):

Reliability and validity are both essential clinometric properties of a test. This study focused on reliability, but there is increasing evidence that ULNTs have diagnostic merit [1-5]. There is however remarkably little literature on the validity of the bedside neurological examination and nerve palpation in patients with neuromusculoskeletal conditions. Future studies should concentrate on the further validation of clinical examination procedures for nerve function and mechanosensitivity.

1 The study question has been clearly defined.

No reply required

2.1 Why were 31 subjects chosen, was this based on any calculation of sample size?

To clarify the sample size included in the study, we added a reference for the sample size calculation for kappa statistics. The revised sentence now reads as follows (page 7, paragraph 1):

Thirty one patients (15 men and 16 women) were recruited from the Rheumatology and Physiotherapy Department of the Balgrist University Hospital in Zurich, Switzerland. Sample size calculation was based on identifying a moderate strength of agreement at a significance level of 0.05 and a power of 80% [6].
2.2 Were subjects naïve to testing prior to the examination by the GP? Had they received physiotherapy treatment before the study started. This is important as it might make a difference to testing if subjects were familiar with the tests and with the required responses.

Most of our subjects received physiotherapy treatment at some stage prior to the study. However, we do not know whether similar test procedures were performed during these sessions. The rheumatologist therefore gave concise explanations on the test procedure. Moreover, he performed a straight leg raise procedure on each participant to familiarize them with neurodynamic testing. To clarify this point, we added the following sentence in the method section (page 10, paragraph 3):

We were interested in the reliability of the tests in isolation, i.e., irrespective from findings of a thorough patient interview or other clinical tests. Therefore, a separate clinician (rheumatologist) performed a brief patient interview and screened for any exclusion criteria. He then gave the patients concise explanations on the test procedure and familiarised them with neurodynamic tests by performing a straight leg raise with the addition of ankle dorsiflexion.

2.3 Sensation was assessed as follows “Sensory testing was rated as normal or abnormal” Does this include heightened sensation, or just diminished sensation?.

In our instructions to the examiners, we highlighted that both diminished as well as heightened sensation should be rated as abnormal. The revised sentence now reads as follows (page 8, paragraph 2):

Sensory testing was rated as normal or abnormal (heightened or diminished sensation).

2.4 What dermatomal maps were used (reference).

This is a valid point. We are aware that there are significant differences between the dermatome charts. We used the charts from Kendall et al’s “Muscles: Function and Testing”. The dermatome chart is redrawn from Keegan and Garret which is one of the most frequently used dermatome charts. We added this reference and the sentence now reads as follows (page 8, paragraph 2):

Upon detection of abnormal sensation, the investigators mapped the area and classified the findings as dermatomal or non-dermatomal using a dermatome and sensory innervation chart of the upper limb [7].
2.5 The assessors were also required to state whether the sensation loss was dermatomal or non-dermatomal. The results of this have not been included in the results section or the Table. To address this point, we changed table 2 and the results section and now report frequency measures for dermatomal and non-dermatomal findings separately. The revised results section reads as follows (page 11, paragraph 5):

The frequency of positive ratings for each test is presented in Table 3. Sensory testing was positive in 42% of the patients (13% dermatomal; 29% non-dermatomal distribution).

2.6 How much pressure was used in nerve palpation? This is important for replicating the study and for clinicians. Algometers can be used to quantify pressure. However, our study followed a clinical approach and such devices are not readily available in a clinical setting. We therefore decided not to quantify the palpation pressure with an algometer. We attempted to standardize the palpation pressure by giving concise feedback to the two physiotherapists during the 2 hours training. Nevertheless, we acknowledge differences in applied pressure might influence reliability of nerve palpation. We therefore made an attempt to classify the applied pressure for clinicians by rating it as light to moderate. Furthermore, we added this point in the discussion. The revised method section now reads as follows (page 9, paragraph 3):

At least one proximal and one distal site along the radial, ulnar and median nerve were palpated with light to moderate pressure in random order.

The revised discussion section reads as follows (page 15, paragraph 2):

Several factors should be considered when interpreting the level of reliability found in this study. First of all, we did not use pressure algometry to measure and standardise palpation pressure. Manual palpation was chosen to closely replicate clinical practice. The reliability of palpation might be further increased if palpation pressure is quantified.

3 Are the data sound? Yes.

4 Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes, but some data is missing as mentioned above.

No reply required

See answer to point 2.5 above
The discussion and conclusion are well written but as mentioned above there should be some brief discussion regarding the validity of the clinical tests.

Are limitations of the work clearly stated? Some limitations have been recognized.

Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes.

The title needs some adjustment as mentioned above.

Some minor text revision as follows:
1. Page 5 last paragraph. Median nerve is miss spelt.

Point addressed, see point 3 above

No reply required

No reply required

We adjusted the title accordingly, see above

We corrected these spelling errors.
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<th>#</th>
<th>Reviewer 2, Michele Sterling</th>
<th>Our reply</th>
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<td>1</td>
<td>The research question is well defined.</td>
<td>Thank you. No reply required.</td>
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<td>2</td>
<td>The methods are generally appropriate and well described. I have a few minor concerns regarding description of the subjects. The description of the inclusion criteria could be improved. What is your definition of ‘non-acute’?</td>
<td>We defined acute and non-acute in terms of duration of symptoms. We defined ≥1 months as being non-acute. To clarify the inclusion and exclusion criteria used, we revised the method section as follows (page 7, paragraph 1 and 2): Thirty one patients (15 men and 16 women) were recruited from the Rheumatology and Physiotherapy Department of the Balgrist University Hospital in Zurich, Switzerland. Sample size calculation was based on identifying a moderate strength of agreement at a significance level of 0.05 and a power of 80% [6]. Patients were included if they presented with unilateral, non-acute arm and/or neck pain (≥1 months duration) and were between 18 and 60 years old (mean age 44 (SD ± 11.5 years)). Patients were excluded if they had underlying diseases, such as diabetes mellitus, widespread neurological disorders, upper limb/spinal surgery or significant trauma in the preceding 3 months, spinal cord or cauda equina signs, cancer or inflammatory disorders.</td>
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Were all sequential participants included regardless of their ‘diagnosis’? (minor essential revisions) 

We included all patients regardless of their diagnosis if they met the inclusion/exclusion criteria and agreed to participate. We are aware that the patient population studied is broad when compared to Wainner’s population of suspected radiculopathy or carpal tunnel syndrome. However, our sample reflects the patient population that is tested with these tests in clinical practice. |

Additionally is it appropriate to perform t-tests of kappa values? I am not a statistician and would suggest statistical advice on this analysis. (minor essential revision) 

We performed t-tests on the kappa values to compare the reliability of the different test domains. Data analysis was performed by an epidemiologist and a statistician. The equality of dependent kappa statistics can be tested with different models such as used in this study. For reference, see: Donner A, Shoukri MM, Klar N, Bartfay E: Testing the equality of two dependent kappa statistics. *Statist Med* 2000, 19:373-387.
3 The data appear sound. No reply required.

4 Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes. No reply required.

5 Yes the discussion is well written and clear. I have one small issue here. On page 13, the authors state that Wainner et al ‘used structural differentiation’. Is this an error? It seems to be at odds to the argument of this paragraph and what is outlined in the introduction regarding this paper. (minor essential revision) Wainner et al used structural differentiation as one of three criteria for a positive neurodynamic test. However, this criterion itself was not essential for a test to be rated positive since all criteria could independently decide on the test outcome. Their reliability results are therefore not based on structural differentiation as an essential test criterion.

To highlight the shortcoming of the test criteria used in Wainners study, we changed the discussion paragraph as follows (page 13, paragraph 2):

Wainner et al. [3, 8] reported substantial to almost perfect reliability for the interpretation of the ULNTMedian (1) and ULNTRadial (2b) (kappa= 0.76 and 0.83, respectively). Although these authors used structural differentiation as one of three test criteria, a test could be rated as positive when the patients’ symptoms were provoked with the test or when differences in range of motion were detected regardless of the outcome of structural differentiation. Hence, structural differentiation in line with a neurogenic source was not an essential criterion for the test to be considered positive.

6 Are limitations of the work clearly stated? Yes. No reply required.

7 Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes. No reply required.

8 The word ‘increased’ is not required in the title. ‘mechanosensitivity’ alone is sufficient. (discretionary revision) We changed the title as suggested by the different reviewers. The revised title now reads as follows:

Reliability of clinical tests to evaluate nerve function and mechanosensitivity of the upper limb peripheral nervous system

9 Is the writing acceptable? Yes. No reply required.
Reviewer 3, Jørgen Riis Jepsen

One semantic issue demands a revision: In the title and also in the Abstract (Background/Methods/Results/Conclusions sections) and also in the main manuscript the bedside neurological examination seems to be regarded as reflecting conduction loss. To me the term conduction loss is an electrophysiological finding which may or may not reflect the outcome of the neurological examination. I would suggest the authors to change the title to: “Reliability of clinical assessment of the function and mechanosensitivity of peripheral nerves”. Elsewhere in the text, I would suggest the term “nerve conduction” to be replaced by “nerve function”.

Our reply

We would like to thank you for this interesting comment. Even though nerve conduction is used commonly to describe bedside neurological examination, we agree with you that this term does not fully reflect the outcome of the bedside neurological examination. We changed the terminology according to your suggestion. The beginning of the background section now reads as follows (page 5, paragraph 1):

Bedside neurological examination (sensory testing, reflexes and MMT) is used to evaluate lesions of the peripheral nervous system [9]. This assessment screens for nerve injuries characterised by changes in afferent or efferent nerve function such as changes in nerve conduction [10]. Beside these nerve lesions, various other nerve disorders do not necessarily lead to altered afferent or efferent function [11, 12].

Elsewhere in the text, we replaced the term conduction with afferent or efferent nerve function.
In the Background section of the manuscript it is said that a bedside neurological examination screens for conduction loss. Again I would be cautious in using this term because it is well known that a number of nerve entrapments such as of the posterior interosseous nerve may well manifest with pareses (e.g. of the extensor carpi ulnaris muscle) but still with a completely normal electrophysiological examination and no evidence of conduction loss. I think it is somewhat arbitrary to make a distinction between “frank” nerve lesions and other nerve lesions. The truth is that nerve lesions may manifest themselves with physical findings with or without electrophysiological findings, and that electrophysiological findings may even be confusing when they show abnormalities in subjects without symptoms. I agree in the idea of distinguishing between a) findings from the bedside neurological examination which the aims to identify abnormal efferent and afferent function and b) nerve pressure or provocation reflecting mechanosensitivity. However, why not describe the difference between the two by using the terms efferent and afferent function in case of the former? If the authors agree in my thoughts, I would suggest that the authors rewrite the first section in Background.

See comments above.
3 In the section on bedside neurological examination I have noted that the MMT aims to reflect a number of myotomes and that the testing methods by Kendall and McCreary are applied. Instead of describing the movement, e.g. shoulder abduction or elbow flexion, I would suggest that the authors state which muscles are tested according to Kendall and McCreary. In this way it would be possible to reproduce the study, because Kendall and McCreary describe methods for testing individual muscles – not movements. (The frequent tendency to study movements may be due to the fact that muscle function can rarely be studied in an individual muscle in isolation. However, by placing the limb carefully and really controlling the test, this is no major problem for most muscles. Studying individual muscle function has the advantage that one can better approach peripheral nerve lesions from combining knowledge with regard to the innervation pattern with the outcome of muscle testing.)

4 For sensory testing, I would appreciate information as to which nerve innervation territories and/or which dermatomes were tested.

We changed this point as suggested. The revised sentence reads now as follows (page 8, paragraph 1):

**Bedside neurological examination consisted of manual muscle tests, sensory testing and reflex testing. MMTs were performed for the myotomes C4 to T1 (C4: upper trapezius; C5: middle deltoid; C6: biceps brachii; C7: triceps brachii; C8: extensor hallucis longus; T1: palmar interossei). All MMTs were performed using the methods described by Kendall and McCreary [7]. Muscle strength was rated as normal or decreased.**

We added a reference for the dermatome/innervation territory chart used in our study (also suggested by reviewer 1). The revised paragraph now reads as follows (page 8, paragraph 2):

**Sensory testing evaluated sensitivity for light touch. It was examined from the dermatome C4 downwards with tissue paper which was moved circumferentially around the patient’s upper and lower arm. Each finger was examined separately. The patients compared the sensation in the affected arm with the sensation in the unaffected arm [9]. Sensory testing of the upper limb was rated as normal or abnormal (heightened or diminished sensation). Upon detection of abnormal sensation, the investigators mapped the area and classified the findings as dermatomal or non-dermatomal using a dermatome and sensory innervation chart of the upper limb [7].**
For nerve palpation, I would appreciate justification of the studied locations along the nerves, e.g. in the anatomical snuff box instead of where the superficial branch of the radial nerve penetrates the fascia somewhat more proximally.

Since palpation along the whole nerve course is not feasible in clinical practice mainly due to time constraints, we picked at least one proximal and one distal location on each of the three main nerve trunks of the upper limb. These locations were based on accessibility. To clarify the choice of nerve palpation location, we revised the method section as follows (page 9, paragraph 3):

At least one proximal and one distal site along the radial, ulnar and median nerve were palpated with light to moderate pressure in random order. The palpated sites were chosen in regards to the accessibility of the nerve and involved the median nerve in the upper arm and the wrist, the radial nerve in the upper arm, at the distal radius and in the anatomical snuff box and the ulnar nerve in the upper arm and in the ulnar groove at the elbow (see Figure 2). Palpation was rated positive if pain or symptoms were elicited that were different to the unaffected side.
In the Procedure section, it is mentioned that the examining physiotherapists are experienced and blinded to the patients’ diagnoses.
a) Experience is important and to my knowledge few physiotherapists and doctors are able to perform and interpret these tests. The familiarity with the tests and rating from two hours of training is important. It should be discussed in the Discussion section if the results could be generalized to cover examinations made by others and what would be required for generalization.

b) Blinding to the patients diagnoses is fine but probably of minor importance. I would question the validity of the referral diagnoses.

Actually blinding with regard to the intensity, location and side of symptoms has been impossible due to the design of the study as each examiner recorded the current pain intensity to verify comparable pain-intensity at the start of the two testing sessions. This limitation should be dealt with in the discussion.

We agree that experience with the testing procedure may influence reliability. We therefore added a short statement about the possible influence of experience and the resulting limitation for generalization of these results.

The revised section reads now as follows (page 15, paragraph 1):

Thirdly, the fact that the two investigators were experienced physiotherapists with a specialisation in musculoskeletal therapy should be considered before generalising the results of this study. The investigators also received 2 hours training before conducting the testing procedures. Future research is required to investigate whether satisfactory levels of reliability can also be achieved in more novice clinicians without specific training.

The accuracy of the referral diagnoses is not known. However, we believe that the validity of the diagnoses may be of lesser importance for our study, since the clinical tests investigated in this study would often be performed when patients with these diagnoses are referred.

We did not attempt to blind the two physiotherapists to symptom location and intensity. They received a body chart with symptom location from the rheumatologist prior to the examination (refer to page 10, paragraph 3). Knowledge of symptom location and available joint range of motion was a requirement to perform the used test procedures correctly (e.g. for structural differentiation during ULNT) and we therefore decided to blind the physiotherapists only to the referral diagnoses. We do not think that this limits the results of our study and we therefore decided not to include it in the limitation section of the discussion.
Please note that one case is diagnosed as neurolysis of the ulnar nerve at elbow. According to exclusion criteria this case should have been excluded.

Thank you for pointing out this inconsistency in our exclusion criteria. Patients with upper limb/spinal surgery were included in the study, if the procedure was more than 3 months ago similarly to the inclusion criteria for trauma. To clarify the time factor, we revised the method section as follows (page 7, paragraph 2): **Patients were excluded if they had underlying diseases, such as diabetes mellitus, widespread neurological disorders, upper limb/spinal surgery or significant trauma in the preceding 3 months, spinal cord or cauda equina signs, cancer or inflammatory disorders.**

7 Both the tests contained in the neurological examination and the ULNT were performed by the same examiners thus also permitting bias. E.g. one positive finding suggesting nerve affliction could potentially bias the examiner to also rate other findings as positive. This should also be dealt with in the Discussion section.

We addressed this point in the discussion. The revised paragraph reads as follows (page 15, paragraph 1): **Secondly, the examiners’ decision may have been influenced by the outcome of preceding tests. It was however not practical to design the study in a way that the investigators were blinded from previous test outcomes.**

8 In the Discussion section (first three lines) the authors seem to have confidence in the referral diagnoses by stating that various musculoskeletal conditions are present. The latter may well be true, but as said above, I would regard the diagnoses by the referring physicians as of minor validity. The question may be overcome by rephrasing the sentence and inserting an extra word “referred”.

This is a fair comment. We changed the sentence as suggested (page 12, paragraph 3): **The findings of this study demonstrate that clinical tests to assess peripheral nerve injuries have moderate to substantial reliability when performed in patients who are referred with various neuromusculoskeletal conditions.**

9 The Conclusion in the Abstract and the text is almost identical.

We reworded the conclusion in the abstract. It now reads as follows (page 4, paragraph 1): **This study demonstrates that clinical tests which evaluate increased nerve mechanosensitivity and afferent/efferent nerve function have comparable moderate to substantial reliability. To further investigate the clinometric properties of these tests, more studies are needed to evaluate their validity.**
It is recommended that tests for neurological function and tests for mechanosensitivity should both be used in the diagnosis of peripheral nerve disorders because they are based on different underlying pathophysiological mechanisms. This recommendation is probably justified but not based on the findings. Validity issues were not studied and it remains unknown whether the combination of tests have better predictive diagnostic value.

We clearly state that our study focused on reliability and does not report on validity. However, we agree that it is important to consider both clinometric properties when deciding upon the usefulness of a test. Since validity literature on bedside neurological examination and palpation is scarce, we recommend that future studies concentrate on investigating the validity of these test procedures.

The revised conclusion now reads as follows (page 16, paragraph 1):

**Clinical tests to evaluate increased nerve mechanosensitivity and afferent/efferent function have moderate to substantial reliability. This satisfactory level of reliability in combination with the increasing evidence of diagnostic merit [1-5] indicates that ULNTs have acceptable clinometric properties. Bearing in mind the different underlying pathophysiological mechanisms, clinicians should consider testing for both nerve function and nerve mechanosensitivity when diagnosing patients with suspected peripheral nerve lesions. However, the literature on the validity of bedside neurological examination in patients with musculoskeletal symptoms is scarce and not available for palpation.**

**Discretionary revisions:**

1. Check address of author 3.

   Hannu Luomajoki is now affiliated with Zurich University of Applied Sciences. We changed the affiliation accordingly:
   **Zurich University of Applied Sciences, School of Health Professions, Institute of Physiotherapy, Technikumstrasse 71, 8401 Winterthur, Switzerland**

2. Page 13, line 15: “both” to be changed to “the two”.

   The revised sentence now reads as follows (page 14, paragraph 1):
   **Although the two samples are markedly different, both are representative for patients in whom ULNTs are performed.**

3. Table 1: “lateral” to be changed to “Lateral”.

   The revised part of table one now reads as follows:
   **Lateral epicondylalgia**

4. Reference 14: “Examinatin” to be changed to “Examination”.

   The revised reference 15 now reads as follows:
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<td>5</td>
<td>A number of references use upper-case in the titles. Should be altered. Reference style corrected</td>
</tr>
<tr>
<td>6</td>
<td>A number of references use full titles of references. Should be abbreviated. Reference style corrected</td>
</tr>
<tr>
<td>7</td>
<td>Appendix 1 should rather be Figure 1? Appendix 1 changed to figure 1.</td>
</tr>
<tr>
<td>8</td>
<td>Appendix 2 should rather be a table? Appendix 2 changed to table 3.</td>
</tr>
<tr>
<td>9</td>
<td>Appendix 3 should also rather be a figure. The word “peripheral” should be “Peripheral”. Appendix 3 changed to figure 2. Correction of “Peripheral”.</td>
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</table>
It is my impression that the neurological examination tends to be performed by physicians (however, often/mostly a very limited examination) but not by physiotherapists, and that the neurodynamic tests are performed from the few therapists with an experience and special training in manual therapy but not by the majority of physiotherapists and rarely by physicians. A major proportion of upper limb patients constitute a diagnostic challenge because the conventional physical examination is clearly insufficient. I suggest that the Discussion section deals with this.

This is an interesting comment. In our experience, tests for mechanosensitivity are less frequently used in the upper limb than the lower limb and less frequently than bedside neurological examination. Following your suggestion, we added the following sentence in the background section (page 6, paragraph 3):

*Although ULNTs are the equivalent of the straight leg raise for the upper limb, ULNTs are in our opinion less commonly used and not as frequently performed as the bedside neurological examination. This might be due to the fact that ULNTs are somewhat more complex to perform, which may impact on their reliability. To put the tests for mechanosensitivity in perspective, a comparison with the reliability of the clinical tests for afferent and efferent nerve function was made.*

It would also be interesting to hear whether the neurological examination including assessment of nerve soreness and the neurodynamic examination was able to modify or alter the referral diagnoses of the general practitioners.

We agree that it would be interesting whether the neurological examination and the tests for mechanosensitivity would alter an existing diagnosis. This study however cannot answer this question since we focused on “nervous system” tests in isolation. The two examiners did not perform a thorough clinical reasoning based examination and could therefore not make an overall statement about the diagnosis. In our experience, the tests for the nervous system can be positive, but the primary diagnosis of the patient might still be related to another disorder. E.g. a patient with longstanding chronic pain and signs of central sensitization might have positive findings in the neurodynamic examination, but a mechanical neurogenic problem would still not be the primary hypothesis.

We believe that our suggestion to investigate reliability of these tests in the context of a thorough examination addresses your point.