RAPID RESEARCH

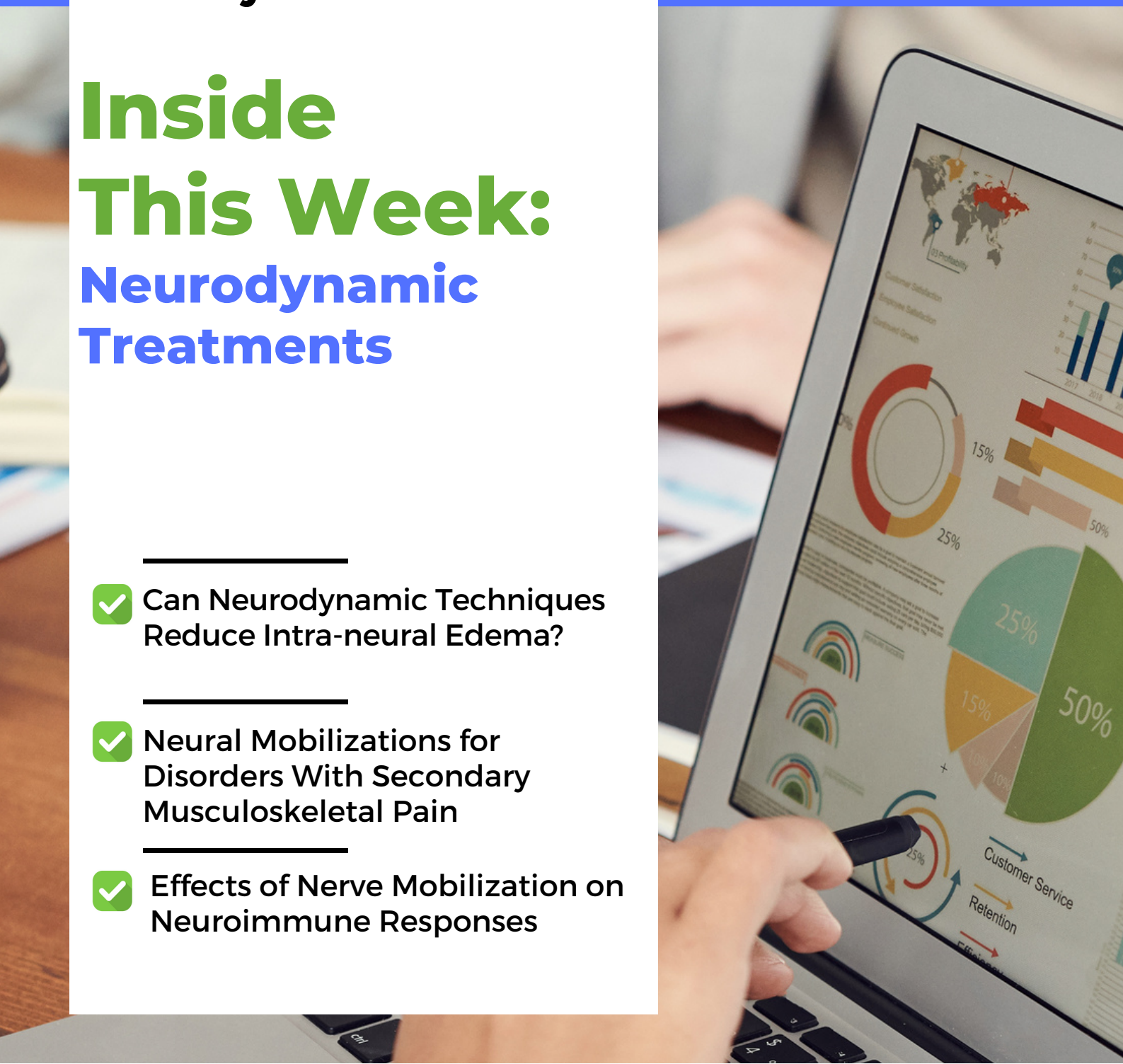
@physicaltherapyresearch

January 2023

Inside This Week:

Neurodynamic Treatments

- Can Neurodynamic Techniques Reduce Intra-neural Edema?
- Neural Mobilizations for Disorders With Secondary Musculoskeletal Pain
- Effects of Nerve Mobilization on Neuroimmune Responses



JANUARY 2023

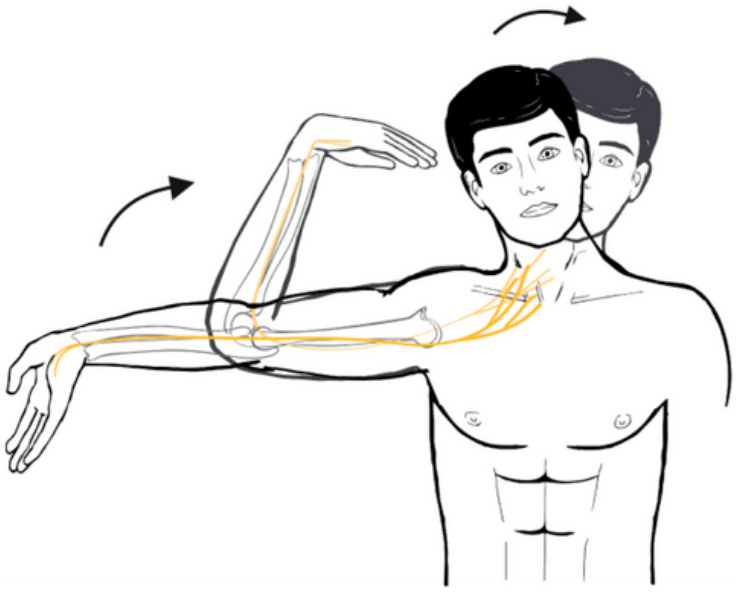
CAN NEURO-DYNAMIC TECHNIQUES REDUCE INTRA-NEURAL EDEMA?

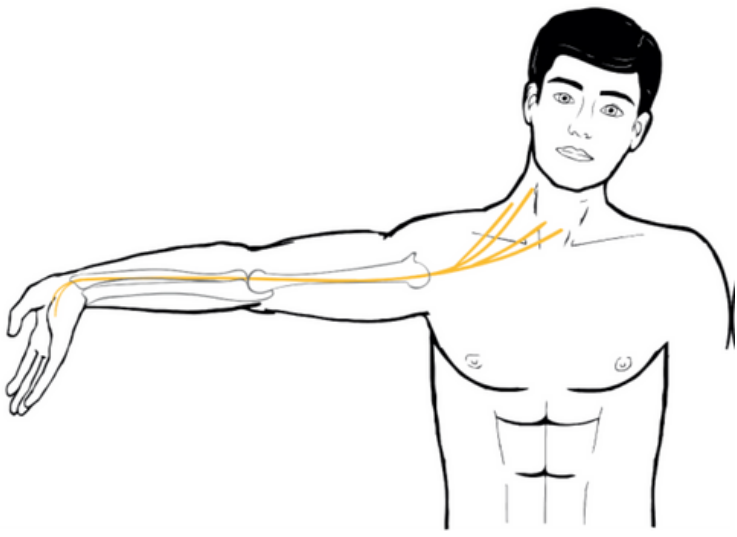
Click for Full Text (Arenas-Arroyo et al. 2022)

JBI 11/11 [100%]

Quality Check
*see appx

This systematic review and meta-analysis estimated the direct effect of neurodynamic techniques on the dispersion of artificially induced intra-neural edema in cadavers.





KEY FINDINGS

4 articles included:
2 trials compared tensioning neurodynamic techniques with no interventions.
1 trial compared 2 different neurodynamic mobilizations (tensioner v sliding).
1 trial was a single-arm pre-post study based on tensioning techniques.

3 trials: intervention duration was 5 min.
1 trial: intervention duration was 1-min.

Pooled results:
Significant increase in fluid dispersion (MD = 2.57 mm; 1.13 to 4.01).

Subgroup analysis:
Increased dye spread in tensioning group (MD = 2.22 mm; 0.86 to 3.57)

MAIN TAKEAWAYS

Neurodynamic techniques improved the intra-neural edema dispersion.

Neurodynamic techniques should be considered for the management of peripheral compression neuropathies.

Tensioning techniques appear to be more effective in helping to disperse intra-neural edema vs. sliding.

Despite the small number of studies, *neurodynamic sliding* techniques could also have a positive effect on intra-neural edema.

NEURAL MOBILIZATIONS FOR DISORDERS WITH SECONDARY MUSCULO-SKELETAL PAIN

JANUARY 2023

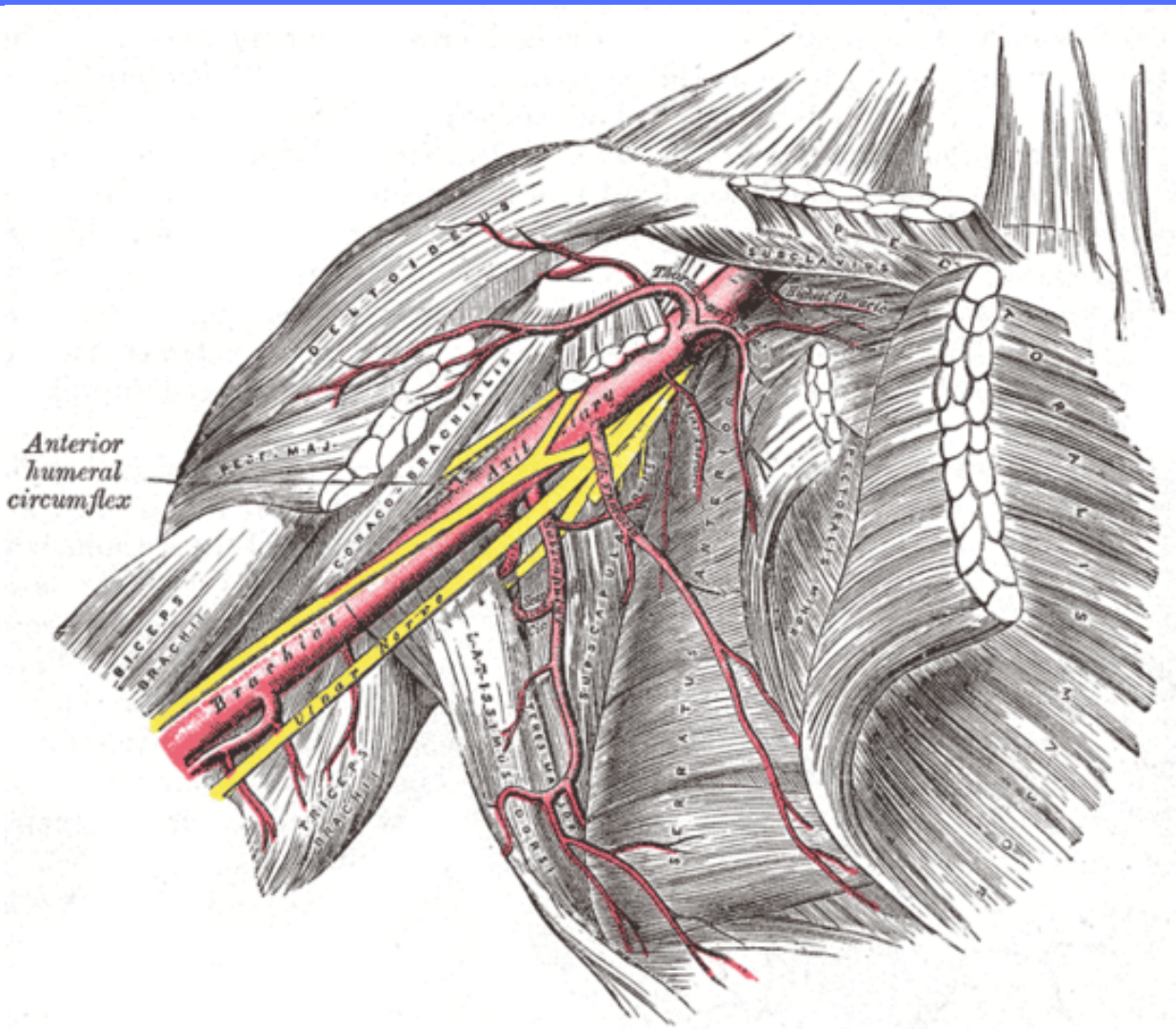
Click for Full Text (Gonzales-Matilla et al. 2022)

JBI 10/11 [90%]

Quality Check

*see appx

This systematic review evaluated the effect of neural mobilization (NM) in people with disorders associated with chronic secondary musculoskeletal pain due to persistent inflammation or diseases of the nervous system.



KEY FINDINGS

11 studies included; 360 participants.
Overall risk of bias was high in >50% of studies
The most reported condition was arthritis.

Pooled data showed (based on very low quality of evidence):
Significant effect of Neuro-mobilization (NM) on reducing pain intensity in people with systemic disorders.

Significant effect of NM on the level of spasticity in individuals with brain or spinal cord injury.

MAIN TAKEAWAYS

Findings of poled data suggested positive effects of NM on reducing pain intensity and the level of spasticity in people with disorders associated with chronic secondary musculoskeletal pain.

Such as from persistent inflammation or a disease of the nervous system.

Current findings must be interpreted with caution given the small number of studies and the very low quality of evidence.

EFFECTS OF NERVE MOBILIZATION ON NEUROIMMUNE RESPONSES

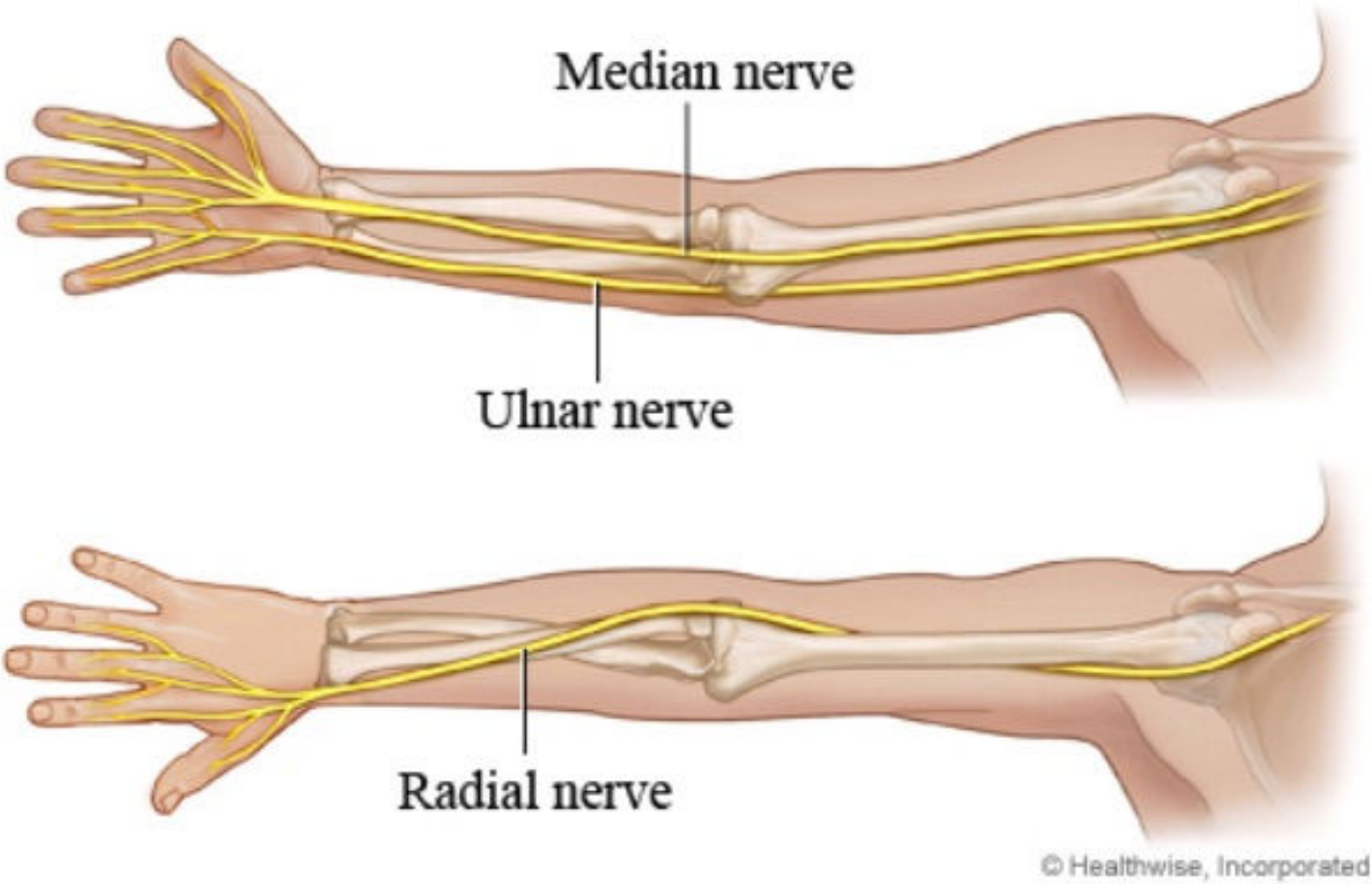
JANUARY 2023

Click for Full Text (Schipholt et al. 2021)

JBI 10/11 [90%]

Quality Check
*see appx

This systematic review identified, appraised, and synthesised the evidence for neuroimmune responses after joint or nerve mobilization compared with sham or no intervention in animals and humans with neuromusculoskeletal conditions.



KEY FINDINGS

18 articles included; 5 human studies & 13 animal studies

Animal Study Findings:

Neuroimmune responses were present.

Decreased:

spinal cord levels of glial fibrillary acidic protein, dorsal root ganglion levels of interleukin-1b, number of dorsal root ganglion nonneuronal cells.

Increased:

spinal cord interleukin-10 levels.

Human Study Findings:

Mixed effects of spinal manipulation on salivary/ serum cortisol levels in people with spinal pain.

No significant effects on serum b-endorphin or interleukin-1b levels in people with spinal pain.

MAIN TAKEAWAYS

Neuroimmune responses are involved in the etiology and pathophysiology of neuromusculoskeletal conditions.

There is evidence that joint and nerve mobilisations positively influence various neuroimmune responses.

However, as most findings are based on single studies, the certainty of the evidence is low to very low.

Further studies are needed.

GIVE US YOUR FEEDBACK!

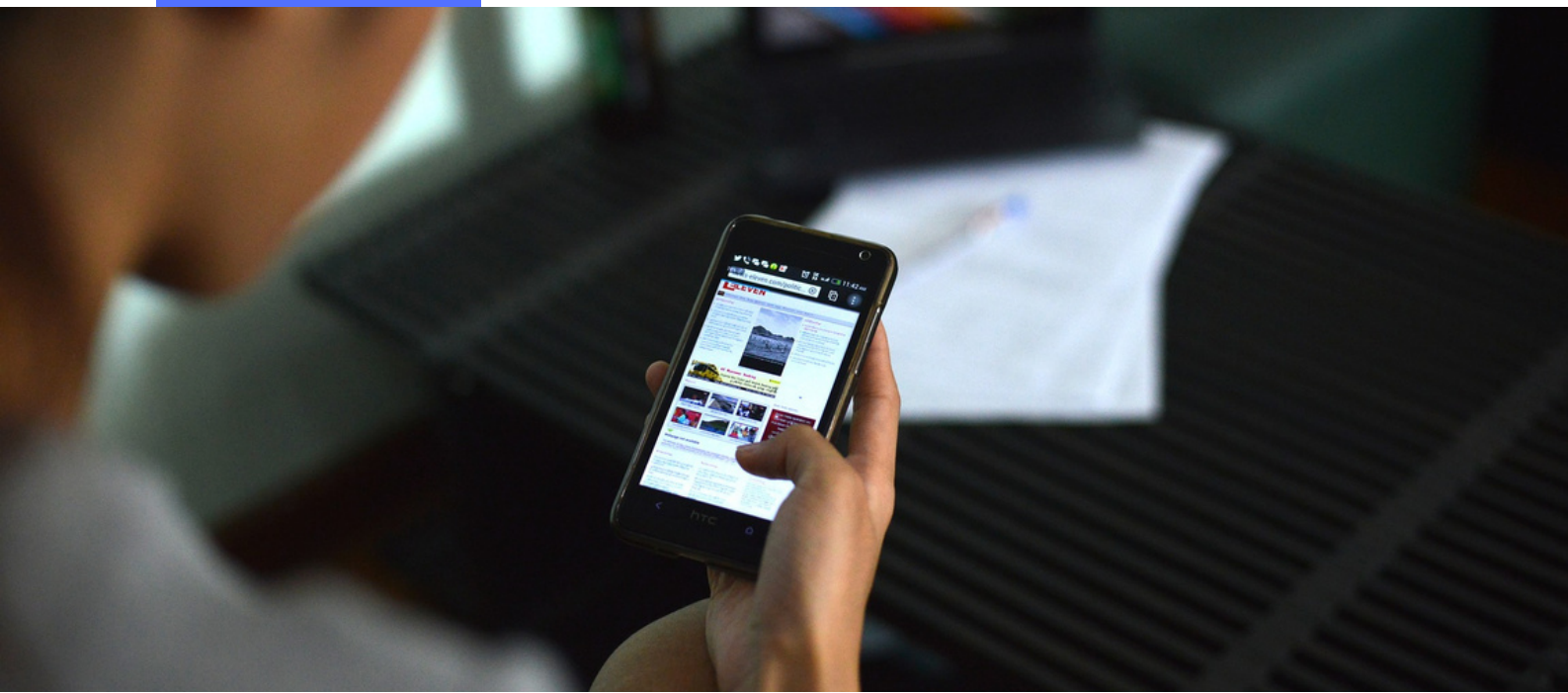
MEMBERS

We are on a mission to make research more accessible, easier to interpret, and quicker to implement.

Help us by giving 1 minute of your time to leave feedback for us.

We would greatly appreciate any feedback you have, as it helps us continually improve!

Leave Review



JBI Critical Appraisal Checklist for systematic reviews and research syntheses

Author: Arenas-Arroyo et al. Year: 2022

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	+	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	+	☐	☐	☐
3.	Was the search strategy appropriate?	+	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	+	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	+	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	+	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	+	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	+	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	+	☐	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	+	☐	☐	☐
11.	Were the specific directives for new research appropriate?	+	☐	☐	☐

Overall appraisal: 11/11 (100%)

LIMITATIONS:

Due to scarcity of available trials, results of some subgroup analyses should be considered with caution.

Included trials analyzed the short-term effects of neurodynamic techniques on fluid dispersion in cadavers only.

JBI Critical Appraisal Checklist for systematic reviews and research syntheses

Author: Gonzales-Matilla et al. Year: 2022

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	+	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	+	☐	☐	☐
3.	Was the search strategy appropriate?	+	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	+	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	+	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	+	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	+	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	+	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	☐	X	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	+	☐	☐	☐
11.	Were the specific directives for new research appropriate?	+	☐	☐	☐

Overall appraisal: 10/11 (90%)

LIMITATIONS:

Potential risk of bias due to the small number of participants and the inability to assess the publication bias.

Heterogeneity among trials in terms of conditions, outcome measures, intervention protocols, and control groups, makes it difficult to interpret the results.

None of the assessed studies included participants with a diagnosis of neuropathic pain.

JBI Critical Appraisal Checklist for systematic reviews and research syntheses

Author: Schipholt et al. Year: 2021

		Yes	No	Unclear	Not applicable
1.	Is the review question clearly and explicitly stated?	+	☐	☐	☐
2.	Were the inclusion criteria appropriate for the review question?	+	☐	☐	☐
3.	Was the search strategy appropriate?	+	☐	☐	☐
4.	Were the sources and resources used to search for studies adequate?	+	☐	☐	☐
5.	Were the criteria for appraising studies appropriate?	+	☐	☐	☐
6.	Was critical appraisal conducted by two or more reviewers independently?	+	☐	☐	☐
7.	Were there methods to minimize errors in data extraction?	+	☐	☐	☐
8.	Were the methods used to combine studies appropriate?	+	☐	☐	☐
9.	Was the likelihood of publication bias assessed?	☐	X	☐	☐
10.	Were recommendations for policy and/or practice supported by the reported data?	+	☐	☐	☐
11.	Were the specific directives for new research appropriate?	+	☐	☐	☐

Overall appraisal: 10/11 (90%)

LIMITATIONS:

Other soft-tissue techniques, besides neural mobilizations, which are not directly aimed at these structures were excluded.

A limited number of animal and human studies were included, and these trials studied a wide range of neuroimmune responses.