

Ulnar Nerve Fluid Dynamics with Ulnar Nerve Bias Neurodynamic Mobilization vs. Sagittal Plane Passive Range of Motion at the Elbow

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Context: It has been established that Neurodynamic mobilization (NDM) results in intraneural fluid movement, a reduction of mechanosensitivity, and a decrease intraneural edema, but it is unclear if a pumping or flushing action exists due to tension which results from NDM or simply because of the repetitive passive range of motion (ROM). A flushing of intraneural fluids may exist as a side effect of repetition of general ROM exercises to the affected anatomical area of entrapment and compression syndromes just as NDM has been shown to change fluid dynamics and decrease intraneural edema in peripheral nerves.

Objective: To determine if 1) upper limb NDM incorporating an ulnar nerve bias and 2) passive ROM to the elbow in the sagittal plane cause significant longitudinal dispersion of an artificially induced intraneural edematous fluid in the ulnar nerve at the cubital tunnel, and 3) to determine whether or not a specific order for NDM techniques is more efficacious than performing ROM exercises in general to encourage dispersion of intraneural edema in the ulnar nerve at the cubital tunnel.

Design: This study is a two level within subjects repeated measures *in situ* design to be performed from 2019 to 2020.

Setting: Texas Tech University Health Sciences Center (TTUHSC), Gross Anatomy and Clinical Anatomy Research Laboratories.

Specimen: A convenience sampling of eight un-embalmed human cadavers acquired through the Willed-Body Program at TTUHSC. Inclusion criteria was normal cervical and upper limb range of motion on the side of experimentation; exclusion criteria was known history of upper limb surgery, cancer, or presence of significant upper limb trauma or systemic conditions that could impair joint or nerve mobility on the side of experimentation.

Intervention/Main Outcome Measure: A comparison of longitudinal fluid dispersion of a biomimetic dye injected within the ulnar nerve will be made between traditional NDM and sagittal plane ROM.

Results: Preliminary pilot data indicates that longitudinal dye spread occurs with both NDM and sagittal plane ROM, however further data collection is necessary to conduct statistical analysis.

Conclusion: No conclusion can be drawn at this time; however, data collection will continue through the fall and will be included within the poster.