

# The Physical Therapy Management of a Patient with Adverse Mechanical Tension Including the Use of Neural Gliders and Tensioners: a Case Report

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## Background

- Adverse mechanical tension on one's nervous system can impair a nerves ability to mobilize in relation to its interfacing tissues and lead to sensations of pain, paresthesia and numbness.
- Common physical therapy intervention includes sliding and tensioning of the irritated nerve and managing the tissues surrounding it.

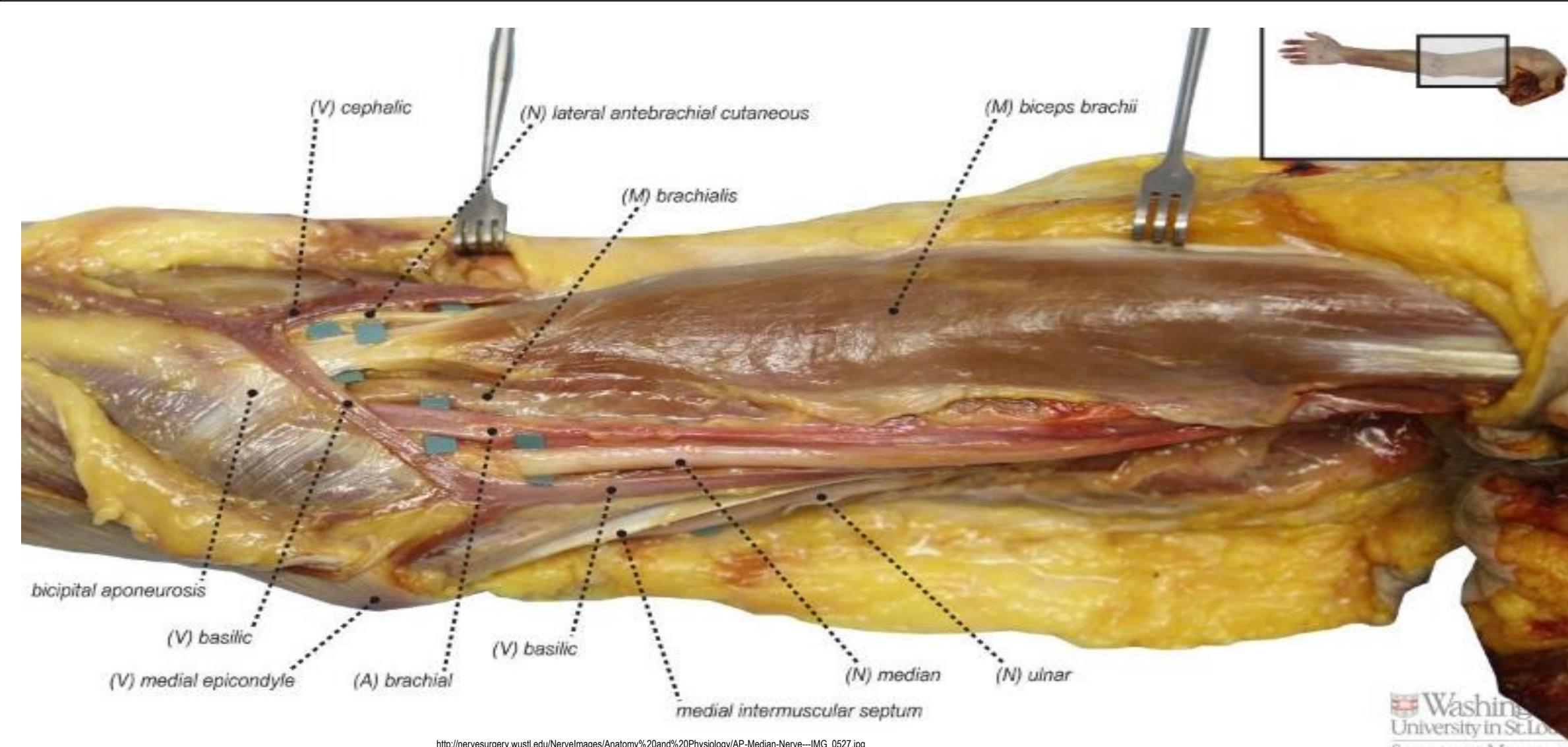


## Purpose

- The purposes of this case report were to (1) provide overview of adverse mechanical tension and (2) to report a case describing specific physical therapy management approaches and outcomes during outpatient rehabilitation for a patient with adverse mechanical tension.

## Patient History

- 52 year old school teacher and mother of two diagnosed with "thoracic sprain."
- History of repetitive upper extremity use.
- Presented with cervicobrachial pain and paresthesia after "packing boxes at work."
- Work restrictions: no pushing or pulling greater than 3 pounds with her left arm.
- The patient had a good health status and an unremarkable medical history.



## Examination

- The examination process revealed impairments of pain, range of motion and strength.

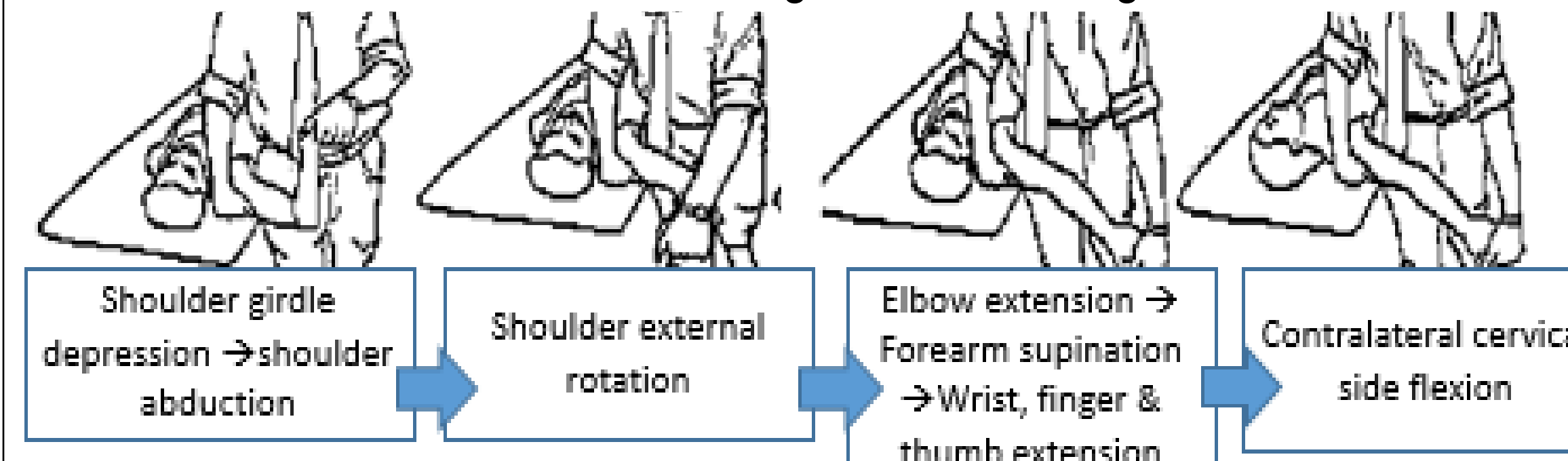
Test & Measures		Initial Evaluation		Discharge	
Range of Motion		Left	Right	Left	Right
Cervical	Flexion	40° (+)		46°	
	Extension	41° (+)		44°	
	Side Bend	20° (+)	38°	35°	38°
	Rotation	68° (+)	65°	68°	65°
Wrist	Flexion	0-69°	0-68°	0-72°	0-73°
	Extension	0-60°	0-48°	0-62°	0-55°
Shoulder	Flexion	WNLs (+)	WNLs	WNLs	WNLs
	Extension	WNLs (+)	WNLs	WNLs	WNLs
	Internal Rotation	WNLs (+)	WNLs	WNLs	WNLs
<b>Muscle Performance</b>					
Gross Strength	Shoulder Flexion	5/5 (+)	5/5	5/5	5/5
	Wrist Flexion	5/5 (+)	5/5	5/5	5/5
Manual Muscle Test	Rhomboids	4/5	4+/5	5/5	5/5
	Lower Trapezius	4/5	4/5	5/5	5/5
	Serratus Anterior	4+/5	4+/5	5/5	5/5
Functional Grip	HHD	35	33	40	45
<b>Reflex Integrity</b>					
Deep Tendon Reflexes (DTRs)	Bicep (C5)	3	2+	3	2+
	Brachioradialis (C6)	3	2+	3	2+
	Tricep (C7)	3	2+	3	2+
<b>Sensory Integrity</b>					
Discrimination	C3-T1 Dermatomes	WNL	WNL	WNL	WNL
<b>Special tests</b>					
Upper Extremity	Neer	+	-	-	-
	Empty Can	+	-	-	-
	Full Can	+	-	-	-
	Tinel (Wrist)	+	-	-	-
	ULNTT (Median Nerve)	+	-	+	-
<b>Palpation</b>					
	Upper Trapezius	HT, TTP	HT	↓HT	↓HT
	Medial Scapular Border	HT	HT	↓HT	↓HT
<b>Postural assessment</b>					
Seated & Standing	Lower Cervical Spine	Flexion		Flexion	
	Upper Cervical Spine	Extension		Extension	
	Thoracic spine	Thoracic Kyphosis		Thoracic Kyphosis	
	Scapulae	Protracted		Protracted	
	Shoulders	Elevated (standing)		WNLs	
<b>Pain Scale</b>					
NRS		See "Outcomes"			
<b>Functional Outcome Measure</b>					
QuickDASH		See "Outcomes"			

(+) = increased pain; WNLs = within normal limits; HHD = Hand Held Dynamometry; HT = Hypertonicity; TTP = tender to palpation; ↓ = decrease; DASH = Disabilities of the Hand and Arm and Shoulder; NRS = Numeric Rating Scale

## Intervention

### Manual Therapy

Nerve Gliding and Tensioning



### Suboccipital Muscle Inhibition



### Range of Motion

Upper Trapezius AROM



Active Foam Roll Stretch



### Strength Training

Retraction Extension External Rotation Adduction



## Discussion

- This case report described the physical therapy management of a patient with adverse mechanical tension.
- The patient experienced a near to full recovery as demonstrated through QuickDASH scores and negative impingement tests and was able to return to work pain-free, without restrictions.
- Some negative outcomes included a positive ULNTT for the median nerve and sensitive DTRs.
- Nerve gliding and tensioning, along with education, stretching and strengthening, may have hastened recovery.
- More evidence is needed to help determine and standardize optimal neural gliding and tensioning dosages and effective adjunct interventions for patients who present with adverse mechanical tension.

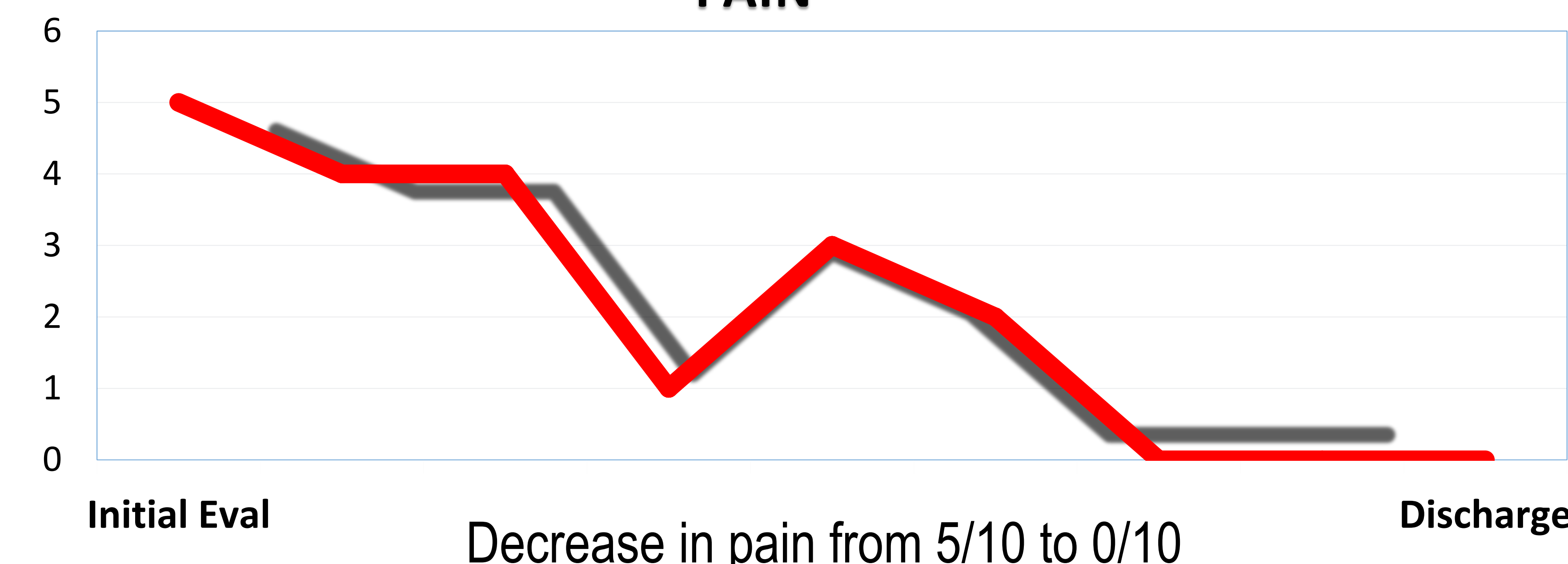
## Acknowledgements

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## Outcomes

- Following a 5 week treatment course of suboccipital release, nerve mobilizations, postural education, stretching, and strengthening the patient demonstrated negative shoulder impingement tests, Tinel's sign and:

### PAIN



### QUICKDASH

