

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

B Manley, BA

University of New England, Portland, Maine



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.

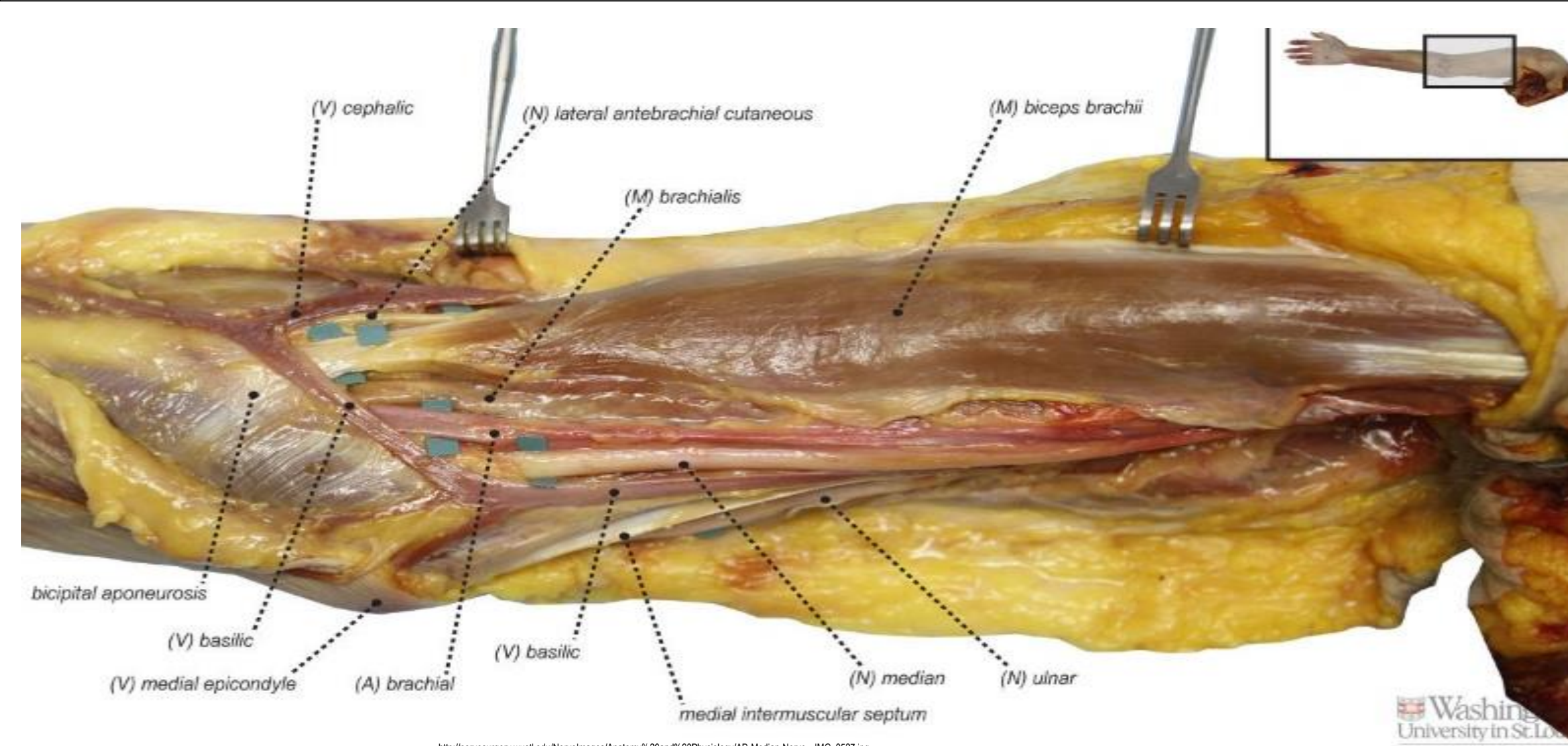


Purpose

- 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.

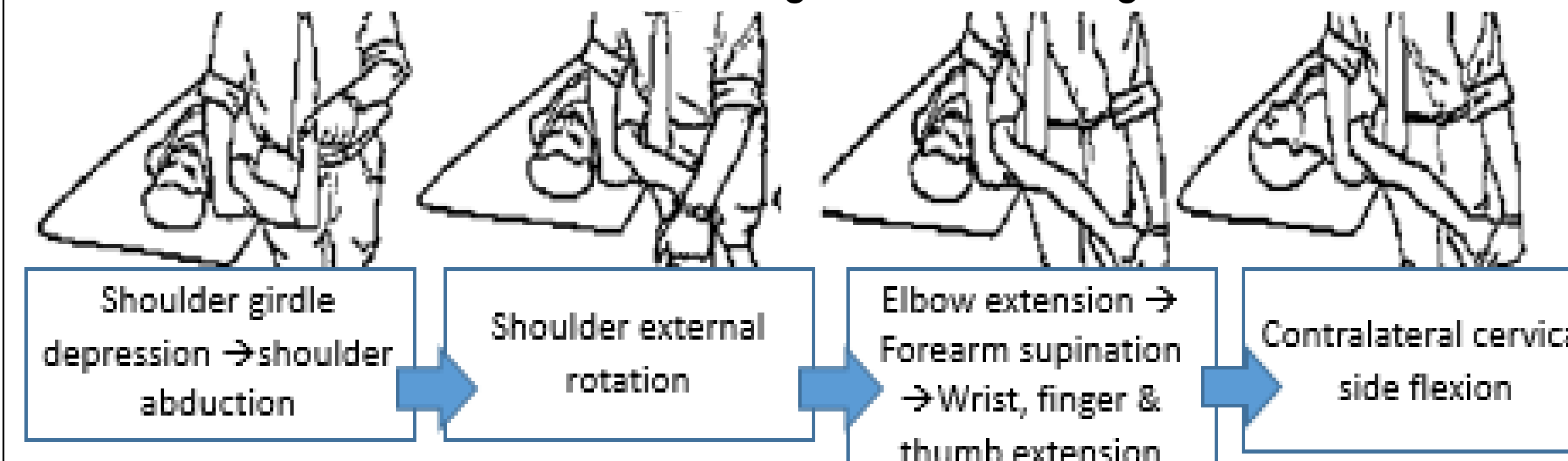
Test & Measures		Initial Evaluation		Discharge	
Range of Motion		Left	Right	Left	Right
Cervical	Flexion	40° (+)		46°	
	Extension	41° (+)		44°	
	Side Bend	20° (+)	38°	35°	38°
	Rotation	68° (+)	65°	68°	65°
Wrist	Flexion	0-69°	0-68°	0-72°	0-73°
	Extension	0-60°	0-48°	0-62°	0-55°
Shoulder	Flexion	WNLs (+)	WNLs	WNLs	WNLs
	Extension	WNLs (+)	WNLs	WNLs	WNLs
	Internal Rotation	WNLs (+)	WNLs	WNLs	WNLs
Muscle Performance					
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
	HHH	35	33	40	45
Reflex Integrity					
Deep Tendon Reflexes (DTRs)	Bicep (C5)	3	2+	3	2+
	Brachioradialis (C6)	3	2+	3	2+
	Tricep (C7)	3	2+	3	2+
Sensory Integrity					
Discrimination	C3-T1 Dermatomes	WNL	WNL	WNL	WNL
Special tests					
Upper Extremity	Neer	+	-	-	-
	Empty Can	+	-	-	-
	Full Can	+	-	-	-
	Tinel (Wrist)	+	-	-	-
	ULNTT (Median Nerve)	+	-	+	-
Palpation					
	Upper Trapezius	HT, TTP	HT	↓HT	↓HT
	Medial Scapular Border	HT	HT	↓HT	↓HT
Postural assessment					
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	
Pain Scale					
NRS		See "Outcomes"			
Functional Outcome Measure					
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.

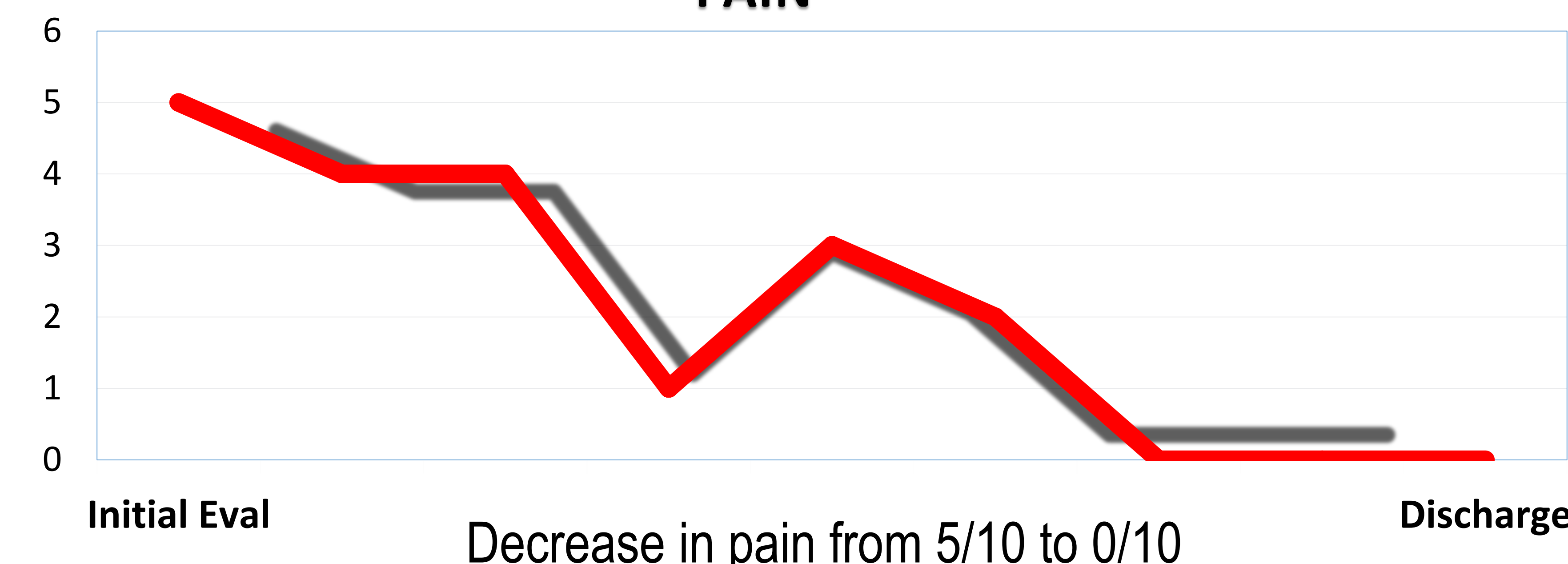
Acknowledgements

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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

