THERAPEUTIC INTERVENTION APPLICATION FOR A 27-YEAR OLD FOLLOWING SHOULDER MUSCLE STRAIN AT WORK: A CASE REPORT

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Abstract

Background

With its intricate structure, the shoulder joint is highly susceptible to injury. Appropriate engagement of scapular muscle forces and adequate mobility of the spine and shoulder are necessary for appropriate scapulohumeral rhythm, reduced injury risk, and functional capabilities. Repetitive tasks in the workforce place individuals at a greater risk of injury. Conservative physical therapy treatment is beneficial for patients experiencing shoulder pain.

The purpose of this case report is to apply the current literature in comparison to our evaluation and treatment methods to reflect upon the process and determine what could have been more effective for this patient.

Case Description

The patient presented in this case is a 27-year-old male who reported to outpatient physical therapy following a shoulder injury at work 3 weeks prior. Upon evaluation, impairments of acute pain of right shoulder, muscle weakness, decreased active shoulder range of motion, and limited thoracic range of motion were documented. His goals were to complete all daily and work duties without pain or limitations.

Outcomes

Over the course of 10 treatments, the patient had full functional mobility of his right shoulder and no reports of pain. Coincidently, he had changed jobs at the end of our therapy episode, but denies pain with new occupational duties. Patient's final status was discussed via

phone call. Formal outcome measures were not assessed and functional goals were presumed as met.

Discussion

This case report enabled the student physical therapist to gain clinical insight via reflecting upon the evaluation process and interventions implemented. It was determined that a more thorough evaluation could have been performed to properly guide treatment and promote an optimal progression in return to previous activities. Clinicians should remember the importance of the scapular stabilizers in shoulder function and the necessity of a strong home program to coincide with in-clinic interventions.

In*troduction*

Shoulder Pain

Shoulder pain affects many individuals throughout the lifespan. As the most mobile joint in the body, the shoulder moves in three planes and has structural laxity, making it different than any other joint. Being such an intricate structure, the shoulder is susceptible to injury with its close proximity of muscles, tendons, and bony structures; its reliance on soft tissue support due to reduced amount of bony stability; and its functionality in daily life that requires near constant use.[1]

Muscle Strain

Muscle strains occur when muscle fibers have been injured and resultant pain occurs secondary to being stretched too far, contracted too strong, or a combination of the two. These injuries are graded based upon muscle damage and secondary symptoms. Muscle strains are more apt to occur with inappropriate biomechanics, poor postures, repetitive movements, and with overexertion/fatigue.[1]

Scapular Dyskinesis and Poor Posture

Scapular dyskinesis is inappropriate scapulohumeral rhythm/position during voluntary shoulder movements.[2] Currently, the true relationship between dyskinesia and clinical pathology is uncertain. Scapular dyskinesis could potentially be the cause of injury or may be resultant from an injury; however, it is not a diagnosis in itself.[2,3] Altered activity of the scapular muscles can occur secondary to abnormal postures of the thoracic and cervical spine. The

interdependent postures of the head, shoulder, and back significantly impact the functional capabilities of the shoulder.[4]

Effect of the Workforce

Repetitive tasks place great loads of stress on one specific group of muscles, especially when workers are engaging in push-pull movements. Push-Pull tasks over extended periods of time may lead to the development of musculoskeletal disorders such as muscle imbalances, strains, pain, etc. as torque, compression, and shear forces are placed upon our joints. [5] Knees, lower back, and shoulders are more susceptible to injury with a push-pull task.[5] Individuals in the manual-labor workforce may also be required to maintain awkward positions, repetitive & forceful muscular contractions, and overhead work which may be very stressful on the shoulder joint.[6] These factors greatly increase risk for shoulder injury, non-specific shoulder pain, and/or tendonitis.

Treatment Options

Physical Therapists often use stretching and strengthening programs as conservative treatment for patients with shoulder pain secondary to muscle strains and scapular dyskinesis.[2,3] A comprehensive approach is taken to ensure that the factors contributing to the patient's symptoms are addressed and measures are taken to reduce chance of re-injury.[3] Exercise programs have been shown to improve shoulder function and symptom reduction in labor-intensive jobs that require repeated exposure to shoulder-straining labor. [6]

Case Report

This case report will be dissecting interventions and treatment strategies utilized by a licensed physical therapist and a student physical therapist in the episode of care for a patient with a worker's compensation injury due to repetitive, heavy manual labor. Patient was believed to have sustained a right deltoid muscle strain during a lift and presented with scapular dyskinesis, poor posture, and pain with rest & movement. The purpose of this case report is to apply the current literature in comparison to our evaluation and treatment methods to reflect upon the process and determine what would have or could have been more effective for this patient.

Chief Complaint - Subjective

The presented case involves a 27-year-old male seen post work-related injury while operating a press at a print shop. He reported right shoulder pain that slowly progressed throughout the day, described as being in the shoulder joint, and was bothersome with pushing, pulling, and lifting. He is right handed and the injury severely altered his daily function. He was seen at physical therapy about 3 weeks after initial injury occurred. The initial evaluation was performed by the student's clinical instructor (CI). The patient's right shoulder pain was preventing him from being able to do his regular work duties, which includes lifting up to 90 pounds and moving 2500-pounds roll of paper and spinning them. His pain at rest is 1-2/10 and increases to 8/10 while attempting to sleep on right side and with overhead work; he reports no numbness or tingling. No other methods of treatment had taken place prior to physical therapy evaluation; however, patient had X-ray's taken to rule out a fracture, which were negative. He was managing pain with icing and over-the-counter medication. Per patient

report, no history of previous injuries to his right shoulder but he does have headaches. At time of initial evaluation, patient is on work restrictions of no greater than 20 pounds lifting and no greater than 10 pounds of frequent lifting.

The patient resides with his pregnant fiancé and 3-year-old son. He is active with his son in play and his job requires manual labor, but he does not participate in other sporting/fitness activities. He frequently mows lawn, as it is the summer months, which takes 4 hours on a riding lawn mower. Past medical history was insignificant for the current case but includes back surgery in 2007 & 2008 for tumor and cyst removal in lower back and history of frequent headaches.

Examination

Objective

Outcome Measure(s)

Quick DASH score 31/55 – interpretation being disability percentage of 45%.[9]

Clinical Impression #1

At this point in the evaluation, it is believed that he may have a muscle strain/tendonitis of the right shoulder due to the lateral pain over the insertion of the deltoid, secondary to the repetitive forces of his job and gradual onset of his symptoms. Differential diagnosis that should be explored include: impingement syndrome, labral tear, and rotator cuff tear. At this time, the examination has not lead us towards labral tear or rotator cuff tear as there has not been a

traumatic accident, there are no reports of instability, and his younger age; however, it is important to note that these conditions may also occur secondary to overuse.

Tests & Measures

AROM and MMT

Active range of motion (AROM) was used to identify functional motion that patient can actively perform compared to his uninvolved shoulder (Table 1). The patient reports that, at times, his shoulder clicks/pops but this also occurred prior to his injury.

Manual muscle testing (MMT) was used to identify how this injury has impacted strength or potentially any muscle imbalances that could have led to increased risk of injury (Table 2).

Postural Observation

Postural observation was performed to identify if there were underlying factors or poor body awareness/positioning that may be affecting this patient in everyday life and increase his risk for injury and affect general biomechanics – especially of the intricate shoulder complex.[6] He has a slightly forward head and rounded shoulders in seated and standing postures with increased right scapular winging in static posture.

Palpation

Palpation was used to identify where the patient is feeling his symptoms to aide in diagnosing potentially involved structures. He was tender with palpation of the greater & lesser

tubercles and deltoid insertion of right shoulder. Tenderness also reported over the posterior shoulder during patient-seated palpation examination.

Special Tests

Relevant special tests were used to rule-out or rule-in injury of soft tissue structures such as the labrum, rotator cuff, and muscle-tendinous junctions. Speed's test was used to assess potential biceps or SLAP tear, and was positive on the right.[1] Hawkins-Kennedy was negative, as was administered as portion of an impingement cluster.[1] We ruled out true impingement syndrome as the patient did not have >2/3 positive tests in the subacromial impingement cluster of Hawkins-Kennedy, weak shoulder external rotation manual muscle test, and painful arc test. Other special tests performed resulted in negative findings, including: crossbody adduction test , empty can, and full can. [1,7,8]

Clinical Impression 2

Thus far, the hypothesis of a muscle strain/tendonitis of the (anterior) deltoid has been supported by the examination findings. He presented with slight weakness of his right shoulder into flexion and internal rotation, pain that decreases with rest and increases with activity, range of motion that is not equal on right and left shoulders, pinpoint tenderness with palpation, impaired posture placing him at increased risk for shoulder and neck injuries, gradual onset of symptoms, and negative findings on X-ray in chosen special tests.

Importantly, we wanted to differentially diagnosis his shoulder injury to ensure we are treating appropriately. A rotator cuff tear was ruled out as the patient had minimally reduced

strength of his right shoulder, did not have a positive drop arm test, and his weakness appeared to be secondary to the shoulder pain. From the tests administered at this initial evaluation, it is not believed that there is other soft tissue involvement; however, a test to specifically rule-out a labral tear was not administered and an MRI was not ordered to be certain there is not SLAP tear involvement.

Diagnosis

He is diagnosed with impairments of acute pain of right shoulder, muscle weakness, decreased active shoulder range of motion, and limited thoracic range of motion.

Prognosis

Prognosis for this patient is very good. He is a young, strong male motivated and dedicated to get back to his pre-injured self. Physical therapist and physical therapy student believed that patient would be able to return to full work duties, resume hobbies, perform lawn maintenance, and have no future restrictions or pain in his right shoulder.

Plan of Care

He will be seen by physical therapy for a total of up to 12 visits per worker's compensation regulations. He will be seen two times per week as deemed necessary and treatment sessions will be regressed as patient progresses throughout plan of care. Physical therapist believed that patient would need physical therapy for up to, or less than, 90 days to accomplish his goals.

Patient Goals

Patient goals were established during the initial evaluation to track progress throughout his plan of care and were as follows:

Short Term (To be met in 3 weeks) Goals:

1. Patient will report reduction in overall level of pain to no greater than 5/10 at maximum throughout daily activities for improved quality of life.
2. Patient will report being able to sleep without waking no greater than 2 times per night due to pain to promote healing, reduce stress, and improve quality of life.
3. Patient will be instructed and compliant in a home exercise program to progress towards previous functional level.

Long Term (To be met in 90 days) Goals:

1. Patient will report pain no greater than 1/10 at maximum throughout daily activities for improved quality of life.
2. Patient will report being able to complete full work duties as necessary to return to his regular work schedule and routine.
3. Patient will demonstrate symmetrical strength testing of the upper extremities into all direction with no increase in pain for improved quality of life and functional capability.
4. Patient will demonstrate symmetrical range of motion of the right and left shoulder to promote proper biomechanics, enabling functionality, and reduce future risk of injury.

Interventions

Since the patient's presentation was consistent with a muscle strain/tendonitis of the (anterior) deltoid, my CI initiated a home exercise program that consisted of resisted external rotation, resisted internal rotation, resisted extension, scapular retraction, and scapular rows. Resistance was applied using a green &/or blue TheraBand® up to patient tolerance. My CI's goal was to begin strengthening the scapular stabilizers and rotator cuff musculature with movements that did not reproduce pain or irritation.[1]

The student participated in the patient's care on the second visit, 7/12/18, a few weeks after the initial evaluation. At this time, the patient was less flared up and we were able to get a more accurate assessment. The upper quarter Selective Functional Movement Assessment (SFMA) was performed to decipher current limitations. With our findings, it was apparent that thoracic mobility was severely limited both actively and passively, combined shoulder movements of medial rotation/extension and external rotation/flexion were limited bilaterally, limited cervical extension, and overall poor motor control patterns with heightened upper trap engagement more noticeable on the right vs. left and winging of the right scapula with all overhead movements. We found that he had full passive range of motion of all shoulder motions tested in supine; implying that poor motor control and stability was hindering his ability to obtain full range of motion. Palpation revealed trigger points on his right rhomboids, levator scapulae origin, paraspinals, teres major/latissimus dorsi muscle belly, supraspinatus, and infraspinatus. He also still reported pain around the right deltoid tuberosity.

We changed our path of interventions at this time by including manual therapy for trigger points, pain reduction, and thoracic mobility with therapeutic exercise to address poor

scapular control, strengthening of postural musculature, improve tissue extensibility, and improve quality of movement. Although this is not a strict case of subacromial impingement, the patient primarily works overhead and has a similar presentation in terms of shoulder complex dysfunction, postural compensations, flexibility deficits, and strength deficits; we decided to gear our interventions towards a subacromial impingement case. [2,3,10,11,12]

The following interventions were utilized: manual therapy, therapeutic exercise, modalities, and patient education to improve the previously described impairments. Refer to Table 3 for a more in-depth intervention description. Manual therapy varied in working along the shoulder girdle, cervical spine, superior glenoid region/deltoid insertion, and thoracic spine. Therapeutic exercise was geared towards improving range of motion of the thoracic spine, latissimus dorsi, and cervical spine for increased mobility. It was also used for strengthening of the scapular stabilizers to protect the patients shoulder while performing manual labor.[11,12,13]

Patient education was utilized to promote self-management of pain with cryotherapy, avoiding irritating postures and actions, improve postural awareness, and to provide reasoning behind interventions chosen to increase patient compliance and value of physical therapy. Ultrasound was utilized at one visit to help reduce a spike in pain and inflammation; however, patient did not find relief with this treatment.

During the Course of Treatment

No co-interventions were administered during this therapy episode. Patient would occasionally take over-the-counter medications for pain relief. No changes in patient status deviated our treatment path; however, patient did resume full work duties approximately two

weeks into therapy (mid-July). The increase in active movements caused an increase in pain symptoms of his deltoid, creating a slight set-back in his progress.

Clinical Impression

Our clinical impression did not change throughout the course of this case. We had determined that in order to help reduce his pain and reduce his limitations we needed to reduce his risk of re-injury by training proper postural awareness, improved scapular mechanics for normalized movement, and improve flexibility and tissue extensibility to reduce compensation and altered movement mechanics.

Outcomes

The patient's attendance was excellent throughout our therapy episode. He had missed one week of therapy (2 sessions) due to work not letting him off during the day. However; the patient always called to let us know he wasn't going to make it in earlier that day. He was fairly compliant with his home exercise program.[6] He preferred 2-3 of the exercises and would consistently do those, but at times he would not prioritize exercises as we would've desired. He attended a total of 10 visits prior to student departure. He had full functional movement of right shoulder which was comparable to left shoulder range of motion and mechanics.

He intended to return for one final check-up within the 2-3 weeks after the 8/14/18 session for formal discharge to ensure self-management is going well and for final measurements and outcome measure forms. However, this final session did not occur.

Discharge Status

The patient cancelled his last scheduled physical therapy appointment via My Health. The CI called him on 9/18/2018 to discuss his progress. The patient reported 0/10 pain in the right shoulder, denied any concerns, and was happy with his current level of function. He started a new job and denied any pain with occupational duties.[6] All functional goals appeared to be met at this time.

Discussion

This case report compared selected evaluation tools and intervention methods from the current literature for a physical therapy student to reflect upon the process and gain clinical insight to effectiveness, and what potentially could've been more effective. The case report describes a 27-year-old male, who presented with scapular dyskinesia, shoulder pain, and symptoms consistent with a muscle strain after a work-related injury.

Current literature is supported in this case report as it was exhibited that appropriate rehabilitation progression is necessary to yield desired therapeutic effects.[3,13] The rotator cuff musculature plays an important role in providing proper force coupling during arm elevation and with all other motions to adequately align the humeral head within the glenoid fossa and reduce chances of subacromial impingement.[1,3] Appropriate balance of scapular muscle strength is important for the scapulohumeral rhythm to remain in unison.[3,13] Prone, side-lying, and supine positions record the least activity of upper trapezius activation in comparison to standing which is why we began to incorporate these strengthening positions when able with this patient as we wanted to limit activation of the upper trap.[13] Although the patient was

satisfied with his physical therapy journey, there are a few discussion points that I believe should be addressed.

The SFMA was given during the patient's second visit but this was potentially not the most appropriate assessment tool to use at the time. The SFMA is not beneficial to use with muscle strain/sprain conditions as you are guaranteed to have altered movement patterns and pain with movement secondary to the injured tissues. This tool is most accurately used during the subacute stage to determine poor functional mobility patterns. Because the SFMA was relatively new to me as a clinician, I do not believe I used the information in the best way to develop an optimal rehabilitation program. Looking back at my chosen interventions, I was trapped in a one-track mind of fixing a stability motor control program (SMCD) to where I completely ignored proper strengthening techniques for the scapular stabilizers until later on in his program.

Another point of interest is the lack of thorough evaluation and intervention inclusion at the initial and second re-evaluation, specifically of the scapular stabilizers MMT and all appropriate special tests. Within the first visit, the patient's condition was highly irritable making it difficult to perform all tests and measures. However, a strengthening program was initiated of strengthening the scapular stabilizers and rotator cuff musculature in non-aggravating movements. Although this choice could have been effective for this patient, the evaluation did not suggest a strength loss of this musculature, and the strength deficits could be attributed to pain of the movement secondary to the muscle sprain/strain. Functional scapular arthrokinematics were not formally assessed for scapulohumeral rhythm to fully support the choice of these interventions. The patient was non-compliant with these exercises

upon leaving this session. At his second visit, the SFMA was performed, and we found poor motor recruitment during right shoulder elevation, impaired thoracic mobility, and scapular winging with all right shoulder AROM. However, I failed to advance with the evaluation to determine strength of the scapular stabilizers when I noticed scapular winging, or re-establish the importance of the patient continuing his initially prescribed scapular stabilizing exercises. I also did not re-evaluate a special test to rule-out a SLAP tear which can demonstrate a similar presentation to this patient case. Reflecting now, I believed I could've provided a more proper home program prescription and strengthening in-clinic to potentially produce quicker results as well as have really honed in on a strong evaluation for best practice in determining and treating the involved impairments.

Lastly, during this patient's treatment session we should've spent less time chasing symptoms. Thinking about it now, the patient was consistently experiencing pain over the deltoid insertion throughout his time in therapy. Consistently performing soft tissue mobilization may not have been best practice. There is a gap in my clinical knowledge about referral patterns, and had I looked up potential referral patterns for this patient case, I could've alleviated this discomfort sooner. Or perhaps, referring back to providing the appropriate strengthening program, if I had initiated appropriate musculature recruitment there would not have been pain at this site.

The take home message from this case report is to ensure performance of a thorough evaluation as this will properly guide your treatment sessions, intervention choices, and progression. Without a thorough evaluation and understanding of what needs to be addressed for the patient, the patient may not have an optimal healing environment. With shoulder cases,

it is crucial to evaluate the scapular stabilizers as the scapulohumeral rhythm can greatly hinder shoulder function if not properly functioning. Understand that this is a sole case report and extrapolations should not be made.

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Active Range of Motion (degrees)						
Date (tested side)	6/25/18 (Right)	6/25/18 (Left)	7/12/18 (Right)	7/12/18 (Left)	8/14/18 (Right)	8/14/18 (Left)
Shoulder Flexion	137*	130	165 Poor motor control of upper trap & winging. Elbow flexes.	165 Poor motor control of upper trap. Elbow flexes.	165 Better quality and recruitment of lower trap and rhomboids	165 Better motor control and can maintain a straight elbow.
Shoulder Abduction	137*	140	Not re-measured	Not re-measured	165	165
Shoulder External Rotation	68	70	Not re-measured	Not re-measured		
Thoracic Rotation Tested with SMFA kneeling	Not assessed	Not assessed	Limited – bilateral rotation		WFL (>45 degrees)	WFL (>45 degrees)
Cervical	Not assessed	Not assessed	Limited Extension		Not assessed	Not assessed

Table 1. Representing active range of motion testing measurements gathered during initial evaluation. All measurements were taken with patient seated at the edge of the plinth.
***denotes pain with test**
7/12/18 date included – this is the patient's second visit where student initiated care and recorded fairly significant changes in AROM.

Strength (#/5)				
Date	6/25/18 (Right)	6/25/18 (Left)	7/12/18 (Right)	7/12/18 (Left)
Shoulder Flexion	4*	5	Not assessed	Not assessed
Shoulder Abduction	5	5	Not assessed	Not assessed
Shoulder External Rotation	5	5	Not assessed	Not assessed
Shoulder Internal Rotation	4*	5	Not assessed	Not assessed
Elbow Flexion	5	5	Not assessed	Not assessed
Elbow Extension	5	5	Not assessed	Not assessed
Scapulothoracic Motion	Not assessed	Not assessed	Scapular winging in static position. Early initiation and increased winging during active motion.	Adequate

Table 2. Representing manual muscle testing measurements gathered during initial evaluation. All measurements were taken with patient seated at the edge of the plinth. Discharge measures not taken.
***denotes pain with test**

Date	Manual Therapy (MT)	Therapeutic Exercise (TE)	Rationale	Patient Response
6/25 Initial Eval.		-resisted external rotation -resisted internal rotation -resisted extension -scapular retraction -scapular rows Resistance with green or blue TheraBand®	Strengthening the scapular stabilizers and rotator cuff musculature with movements that did not reproduce pain or irritation	
7/12	-AAROM lumbar lock thoracic rotation - bilateral -STM rhomboids, paraspinals, teres major/lats muscle belly, supraspinatus, infraspinatus -AAROM R shoulder flexion in supine	-thread the needle -AROM shoulder flexion with proper mechanics	MT: Improve thoracic mobility, relieve trigger points (TrP), improve range of motion, improve quality of movement TE: improve thoracic mobility, improve movement quality	TE: Thread the needle used to maintain gained and improve thoracic mobility. Patient able to perform proper mechanics and reduce upper trap engagement during AROM shoulder flexion
7/17	-AAROM lumbar lock thoracic rotation - bilateral -STM rhomboids, paraspinals, supraspinatus, R upper trap. -GH inferior and AP glides grade 2/3	Scapular stabilization- -Prone Y's x8 - does not feel proper muscle engagement -Modified Plantigrade plank with alternating shoulder flexion x3 each: harder stabilizing R>L -Standing shoulder flexion wall ball rolls -Standing wall shoulder flexion with scapular feedback x10 -Prone I's x10 Ultrasound: US: 3 MHz, .75 W/cm^2, continuous. Patient supine	MT: Continued from above; Included pain relief TE: Continued from above; Included improve dynamic scapular stability, strengthen scapular stabilizers Ultrasound: Pain reduction of pinpoint spot on anterior upper arm (near deltoid insertion)	TE: -Prone Y's: = not proper muscle engagement. -Modified Plantigrade plank; too difficult, recreated deltoid pain. -Standing wall-ball rolls recreated tension on his deltoid; too challenging

7/19	-AAROM lumbar lock thoracic rotation - left -STM rhomboids, paraspinals, supraspinatus, R upper trap.	Scapular stabilization- - Prone Y's off edge of table x8 - bothersome to pain point -Standing scapular squeeze with emphasis on R scapula down&back x10 with 2-3 second hold -Prone I's x10 -Levator stretch of R x60 seconds -Recreating "work set-up" with instruction of modifications and proper muscle engagement/movement to protect back and shoulders	MT: Continued from above TE: Continued from above. Attempted recreating work site requirements.	TE: Prone Y's with increased cueing he felt correct muscle recruitment; bothersome to the deltoid insertion. Wall bilateral scapular squeezes initiated for feedback from the wall, greater postural challenge, and proper muscle recruitment. Levator stretch; patient reports he often gets headaches and has pain/tenderness on levator insertion. Gets relief with stretch. Objects at the facility were not applicable enough to truly recreate the scene – so we focused on patient education of movement.
7/24	-MET to R pec minor -STM rhomboids, paraspinals, R teres minor/major, R latissimus dorsi - TrP release to teres minor, and ~deltoid insertion (pain point)	-Standing scapular squeeze with emphasis on R scapula down&back 2x10 with 2-3 second hold -Floor Angels without pillow/roll x15 -Wall Angels x5 -Weight bearing modified plank with push-up plus x5 -Standing wall push-up plus x5 -Thread the Needle x7 each side	MT: Continued from above ; included postural musculature stretching techniques TE: Continued from above. Removed work site set-up.	TE: Floor angels felt "awkward" to him and he struggled with coordination. Other attempted exercises continued to irritate the pinpoint spot on his deltoid.

8/2	-MET to R pec minor -Manipulation for general thoracic mobility, pain relief, and neurophysiological effect on foam roll -STM rhomboids, paraspinals, R teres minor/major, R latissimus dorsi -MET to B upper traps - TrP release to teres minor and ~deltoid insertion (pain point)	-Standing scapular squeeze with emphasis on R scapula down&back 2x10 with 2-3 second hold -Standing scap squeeze with R arm flexion and abduction cueing on mechanics and upper trap relaxation -Thread the Needle x7 each side -Standing doorway lat stretch "door hang", bilateral 2x60 seconds -Levator Scapulae stretch bilateral, 2x60 seconds	MT: Continued from above. TE: Continued from above.	TE: Doorway latissimus dorsi stretch added as patient reports a “pull” when doing overheard motions. Trialed many different stretching options for him as he was more compliant with his stretches than strengthening.
8/7	-STM rhomboids, paraspinals, R teres minor/major, R latissimus dorsi - TrP release to teres minor and ~deltoid insertion (pain point)	-Standing scapular squeeze with emphasis on R scapula down&back 2x10 with 2-3 second hold -Standing scap squeeze with R arm flexion and abduction cueing on mechanics and upper trap relaxation -lat pull down with red theraband, with verbal cues for tech -bent over weed pulls -bent over horiz abd -Standing doorway lat stretch "door hang", bilateral 2x60 seconds -Levator Scapulae stretch bilateral, 2x60 seconds	MT: Continued from above. TE: Continued from above.	TE: Included strengthening exercises for engagement of the low/mid trap and rhomboids for improved strength of posterior postural and scapula stabilizers. Patient was able to tolerate resistance at this session where he hadn’t been able to before.

8/9	Manual Therapy: -STM rhomboids, paraspinals, R teres minor/major, R latissimus dorsi - TrP release to teres minor and upper trap - TrP release with thera-cane and self-instructions for use at home	Standing: -scapular squeeze with emphasis on R scapula down&back 2x10 with 2-3 second hold -scap squeeze with R arm flexion and abduction cueing on mechanics and upper trap relaxation -lat pull down with red theraband, with verbal cues for tech -Ball on wall in multiple directions -scapular stability with yellow theraband in multiple patterns -doorway lat stretch "door hang", bilateral 2x60 seconds -Levator Scapulae stretch bilateral, 2x60 seconds Prone: -Shoulder ext. 1# x15 -weed pulls 1# x 15 -horiz abduction 1# x 15	MT: Continued from above. Included self-theracane TrP release. TE: Continued from above. Included scapular strengthening.	TE: Added standing scapular stability with dynamic challenges. He was able to tolerate these challenges where as previously these exercises were too irritating.
8/14		- TrP release with thera-cane and self-instructions for use at home - superior, medial aspect of right scapula x 7 minutes Standing: -scapular squeeze with emphasis on R scapula down&back 2x10 with 2-3 second hold -scap squeeze with R arm flexion and abduction cueing on mechanics and upper trap relaxation	MT: Continued from above. TE: Continued from above.	N/A

8/14 cont.		-lat pull down with red theraband, with verbal cues for tech -Ball on wall in multiple directions -Wall scapular stability yellow theraband; multiple patterns -doorway lat stretch bilateral 2x60 seconds -Levator Scapulae stretch bilateral, 2x60 seconds Prone: - 1# Shoulder ext., weed pulls, horiz abduction to fatigue		
8/16	-Soft tissue with wooden ball tool to levator insertion/superior medial rhomboid insertion	Standing: -lat pull down with green theraband -Wall scapular stability with yellow band - multiple patterns - flexion, Y's, circular flexion -Y pull down into T -doorway lat stretch bilateral 2x60 seconds - Levator Scapulae stretch bilateral, 2x60 seconds *All scapular exercises performed to fatigue **Verbal cueing for most exercises -but overall much better awareness	MT: Continued from above. TE: Continued from above.	TE: Progressed to green theraband. Increased time until fatigue with wall scapular stability drills.

Table 3. Representing interventions utilized during this patient case. Rationale included for discussion of why interventions were chosen.
STM = Soft-tisse mobilization
TrP = Trigger point