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Physical therapy rehabilitation of arthroscopic rotator cuff repair: a case study

Braden Benson

University of North Dakota

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Physical Therapy Rehabilitation of Arthroscopic Rotator Cuff Repair: A Case Study

by

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Bachelor of Science in Exercise Science
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A Scholarly Project Submitted to the Graduate Faculty of the

Department of Physical Therapy
School of Medicine
University of North Dakota

in partial fulfillment of the requirements for the degree of

Doctor of Physical Therapy

Grand Forks, North Dakota
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This Scholarly Project, submitted by Braden Benson in partial fulfillment of the requirements for the Degree of Doctor of Physical Therapy from the University of North Dakota, has been read by the Advisor and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

(Graduate School Advisor)

(Chairperson, Physical Therapy)
PERMISSION

Title Physical Therapy Rehabilitation of Arthroscopic Rotator Cuff Repair: A Case Study

Department Physical Therapy

Degree Doctor of Physical Therapy

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Signature

Date 10-17-17
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ACKNOWLEDGEMENTS

I take this opportunity to thank all those who have been directly or indirectly related to the completion of this project.

I would like to personally thank Dr. Renee Mabey for her supervision and guidance throughout this process.
ABSTRACT

Background and Purpose. A rotator cuff tear is a common cause of pain and disability among older adults and can lead to a decreased ability to perform daily functions. The purpose of this case report is to look at a single patient’s rehabilitation following arthroscopic repair of a rotator cuff tear utilizing therapeutic exercise, neuromuscular re-education, and manual therapy techniques.

Case Description. The patient was a 69-year-old, Caucasian male who was referred to physical therapy for evaluation and treatment following left shoulder arthroscopy for rotator cuff tear and sub-acromial decompression. The patient complained of increased pain and decreased function that progressively worsened over several years. Interventions included therapeutic exercise, neuromuscular re-education, and manual therapy techniques to decrease pain and increase strength and range of motion.

Outcomes. Following therapeutic interventions over the course of an 8-week period, the patient demonstrated near normal function in his surgically repaired shoulder and had a significant decrease in pain.

Discussion. This case suggests that through the use of therapeutic exercise, neuromuscular re-education, and manual therapy techniques, function will be restored to patients following arthroscopic repair of rotator cuff tears.
Rotator cuff pathology is a common cause of shoulder pain and can lead to weakness, shoulder instability, and limitation of daily activities. Symptomatic disease (increased pain, decreased mobility/function, sleep disturbances) affects between 4% and 32% of the patients with rotator cuff tears. Rotator cuff tears are a significant musculoskeletal problem amongst the United States. In 2013, approximately 2 million people in the United States visited their doctors because of a rotator cuff problem. A torn rotator cuff can lead to many difficulties when it comes to performing overhead activities, such as the way a person gets dressed or washes their hair, and the pain can limit almost all activity.

The rotator cuff is comprised of four muscles that attach to the upper arm bone (humerus) and the shoulder blade (scapula). The four muscles are the supraspinatus, infraspinatus, teres minor, and subscapularis. These four muscles work together to control the humerus and maintain stabilization within the shoulder joint during movement. When one or more of the rotator cuff muscles are torn, the rotator cuff can no longer work as designed to stabilize the humerus during activity. This may cause pain, weakness, and the inability to perform activities of daily living (ADLs). The most commonly torn rotator cuff muscle is the supraspinatus due to the placement of the tendon below the acromion.
A rotator cuff tear can be classified into two different categories: partial thickness tears and full thickness tears. Depending on the size and location of the tear, conservative or surgical treatment may be recommended. Refer to Table 1 for classification of partial thickness rotator cuff tears and Table 2 for full thickness rotator cuff tears. Full thickness tears are classified by the tear at the widest diameter.

<table>
<thead>
<tr>
<th>Partial Thickness Tears</th>
<th>Table 2. Classification of Full Thickness Tears</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1 &lt;3 mm deep</td>
<td>Small &lt;1 cm</td>
</tr>
<tr>
<td>Grade 2 3-6 mm deep</td>
<td>Medium 1-3 cm</td>
</tr>
<tr>
<td>Grade 3 &gt;6 mm deep</td>
<td>Large 3-5 cm</td>
</tr>
<tr>
<td></td>
<td>Massive &gt;5 cm</td>
</tr>
</tbody>
</table>

Conservative, or non-surgical treatment may consist of rest, activity modification, non-steroidal anti-inflammatory drugs (NSAIDs), steroid injection, or physical therapy. The main purpose of conservative treatment is to decrease pain and increase overall function. Conservative treatment may consist of range of motion exercises, strengthening of the scapula-thoracic muscles and pain management through the use of modalities.

If conservative treatment fails to improve the symptoms, surgical interventions may be recommended. Surgery may also be recommended if the symptoms have persisted over a period of time, if there is significant weakness/loss of function, a large tear, or if the tear is due to an acute injury.
Surgical intervention may consist of an all-arthroscopic (AA) approach or mini-open (MO) repair. The MO repair has been regarded as the gold standard for rotator cuff tear repair for decades and has been proven to yield positive results in 90% of patients.\textsuperscript{4,5} Due to surgical advancements over the past decade, a new surgical intervention has taken over as the preferred approach for many surgeons.\textsuperscript{6} The AA technique has shown faster recovery rates and better cosmetic results as compared to the MO repair. However, due to both procedures producing positive results with good clinical outcomes, the most effective technique of repair is still undecided.\textsuperscript{7}

According to a study by Anouk, Fermont, et al. there are twelve prognostic factors that are associated with a positive recovery following arthroscopic rotator cuff repair. These factors were divided into four categories: demographic (younger age, male gender), clinical factors (higher bone mineral density [BMD], absence of diabetes mellitus [DM], higher level of sports activity, greater preoperative shoulder ROM, absence of obesity), factors related to cuff integrity (smaller sagittal size of the cuff lesion, less retraction of the cuff, less fatty infiltration, no multiple tendon involvement), and factors related to the surgical procedure (no concomitant biceps or acromioclavicular joint procedures).\textsuperscript{8} Post-surgical rehabilitation consists of a period of rest to allow the repaired tissues to heal, followed by ROM and strengthening exercises, and neuromuscular re-education.
Positive results have been proven for both conservative and surgical repair of degenerative rotator cuff tears. A study by Heerspink et al. showed no significant difference in functional outcome as measured with the Constant-Murley Score (CMS) at 1-year post treatment between a conservative and surgical repair group. However, there was a significant difference in pain and disabilities in favor of the surgical repair group using the Visual Analog Scale (VAS). The best outcomes in function and pain were seen in patients with an intact rotator cuff postoperatively.

The purpose of this case report is to describe the use of therapeutic exercise, neuromuscular re-education, and manual therapy techniques for the rehabilitation of a patient following arthroscopic repair of a rotator cuff tear.
CHAPTER II
CASE DESCRIPTION, EXAMINATION, EVALUATION, DIAGNOSIS, PROGNOSIS, AND GOALS

Case Description

The patient is a 69-year-old, Caucasian male who was referred to physical therapy for evaluation and treatment following left shoulder arthroscopic repair for rotator cuff tear and sub-acromial decompression. Prior to surgical intervention, the patient complained of increased pain and decreased function that progressively worsened over several years. No single traumatic event was noted for the cause of the rotator cuff tear. He complained of increased pain during activity and all overhead motions. Pain was relieved by medication, cessation of activity, and ice. The patient was independent with all activities of daily living (ADLs) prior to surgery. He has been through physical therapy before following a TKA. He is currently retired military veteran and lives at home with his spouse. He worked in a manufacturing mill performing numerous jobs for 40+ years and enjoys golfing and fishing.

The patient has a notable past medical history list including osteoarthritis (OA) of bilateral shoulders and knees, R total knee arthroplasty (TKA), multiple inguinal hernias, abdominal hernia, hypertension (HTN), and carpal tunnel syndrome bilaterally. Surgery was performed to correct the inguinal and abdominal hernias in the distant past. The patient was deemed medically stable for physical therapy. The patient had previously tried conservative treatment for his shoulder
pain, including physical therapy and steroid injections with minimal relief of symptoms. Current medications for the patient include Aspirin, Atorvastatin, Ziac, Lorazepam, Hydrocodone, and Oxycodone.

Upon arrival for post-surgical rehabilitation, the patient rated his lowest pain and pain at rest at a 3/10 (0=no pain, 10=extreme pain) and rated his highest amount of pain at a 10/10. He described his pain as a dull, constant ache. Pain significantly increased with activity. He complained of sleep disturbances and difficulty performing ADLs such as bathing and dressing. The patient was limited in his ability to help his spouse with chores around the house due to the surgical intervention and use of abduction pillow sling following the surgeon’s protocol.

The patient’s goals for therapy included decreased pain and increased function of his left upper extremity (UE) in order to perform ADLs, help his spouse around the house, and continue his recreational activities.

**Examination**

Initial examination occurred 3 days post-op. The Problem-Oriented, or SOAP, model was used for the examination process. The patient’s functional outcome was measured using the Quick DASH (Disabilities of Arm, Shoulder, Hand) assessment tool. Range of motion, strength, palpation, and Numeric Pain Scale were also used during the examination process. Refer to **Table 3** for psychometric attributes of examination processes.
Table 3. Reliability and Validity of Examination Procedures

<table>
<thead>
<tr>
<th></th>
<th>Intra-rater Reliability</th>
<th>Inter-rater Reliability</th>
<th>Test-Retest Reliability</th>
<th>Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goniometric Measurements</td>
<td>0.94 - 0.97¹⁰</td>
<td>0.98¹¹</td>
<td>0.97 - 0.98¹¹</td>
<td></td>
</tr>
<tr>
<td>Manual Muscle Testing</td>
<td>0.96 - 0.98¹²</td>
<td>0.82-0.97¹²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numeric Pain Scale</td>
<td>0.79 - 0.92¹³</td>
<td>1.⁰¹³</td>
<td>0.8 - 0.88¹³</td>
<td></td>
</tr>
<tr>
<td>Quick DASH</td>
<td></td>
<td></td>
<td>0.94¹⁴</td>
<td>0.98¹⁴</td>
</tr>
</tbody>
</table>

Functional Outcome Measure. The shortened Quick DASH has been proven to show similar reliability and validity as the DASH and may be used in the examination of upper extremity disorders.¹⁵ At the initial examination, the patient scored an 81.8 on the Quick DASH assessment. Scoring can range from 0 (no disability) to 100 (most severe disability). There were no special tests performed for use of differential diagnosis due to the surgical repair of the rotator cuff. Due to the surgical intervention, the patient was very limited in his ability to perform many functional daily activities and was unable to perform his usual recreational activities.

Range of Motion. Range of motion (ROM) measurements of the upper extremities were gathered passively at the initial examination using goniometric technique. The patient was within functional limits (WFL) on his R UE and limited due to pain on the L UE. Refer to Table 4 for ROM measurements.
Table 4. Range of Motion in Degrees – Initial Evaluation and Discharge

<table>
<thead>
<tr>
<th>Initial</th>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROM – Abduction</td>
<td>NT</td>
<td>160</td>
</tr>
<tr>
<td>PROM - Flexion</td>
<td>105</td>
<td>160</td>
</tr>
<tr>
<td>PROM - External Rotation</td>
<td>30</td>
<td>80</td>
</tr>
<tr>
<td>PROM - Internal Rotation</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>AROM – Abduction</td>
<td>NT</td>
<td>160</td>
</tr>
<tr>
<td>AROM – Flexion</td>
<td>NT</td>
<td>160</td>
</tr>
<tr>
<td>AROM – External Rotation</td>
<td>NT</td>
<td>80</td>
</tr>
<tr>
<td>AROM – Internal Rotation</td>
<td>NT</td>
<td>70</td>
</tr>
</tbody>
</table>

- AROM not tested at initial evaluation due to healing precautions.

Strength. The patient’s UE strength was measured by performing manual muscle testing (MMT). The involved L UE was not tested. The patient displayed some minor weakness when the R UE was assessed. Grip strength was measured using a Hand Grip Dynamometer. Refer to Table 5 for strength measurements.

Table 5. Manual Muscle Testing – Initial Evaluation

<table>
<thead>
<tr>
<th>Location</th>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ant Deltoid</td>
<td>NT</td>
<td>4-</td>
</tr>
<tr>
<td>Mid Deltoid</td>
<td>NT</td>
<td>4-</td>
</tr>
<tr>
<td>Post Deltoid</td>
<td>NT</td>
<td>4-</td>
</tr>
<tr>
<td>Internal Rotators</td>
<td>NT</td>
<td>4</td>
</tr>
<tr>
<td>External Rotators</td>
<td>NT</td>
<td>3+</td>
</tr>
<tr>
<td>Grip Strength</td>
<td>5#</td>
<td>70#</td>
</tr>
</tbody>
</table>

* MMT of Lt shoulder deferred due to healing precautions.
**Palpation.** Palpation was performed along shoulder, scapula, neck, and back. Tender areas included: acromion, deltoid insertion, humerus, supraspinatus, and the upper trapezius. The pain was localized around these areas and was mainly due to surgical procedure and improper use of the abduction sling.

**Systems Review.** None significant. HTN reported in PMH list, controlled by medication. Vitals were not recorded (BP, HR, RR) upon initial evaluation.

**Evaluation, Diagnosis, Prognosis, Goals**

The patient's medical diagnosis upon arrival to PT and following the PT examination, was history of arthroscopic surgery of shoulder (ICD-10 code Z98.89). Based on the examination findings, the patient may be included in the APTA Adapted Practice Pattern 41: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Bony or Soft Tissue Surgery.

The patient's prognosis was good to excellent for the stated goals. Although this patient did not meet all of the criteria listed in the study by Anouk, Fremont, et al., the patient had minimal co-morbidities that would affect the rate of healing of the surgical site. He had a good support system at home with his spouse and was highly motivated to return to his prior level of function (PLOF). The patient had previously been through physical therapy services so was familiar with the system and was a willing participant in all activities.
The short-term goals included decreasing the pain to a 3-4/10 with functional activity and to be independent with a home exercise program (HEP) to allow for completion of ADLs at home. These goals were to be met within 3 weeks. The long-term goals consisted of increasing strength to a 4-5/5 to allow the patient to be able to lift light objects and to have a pain rating of 0-2/10 with activity to return to prior level of function (PLOF). These goals were to be met within 2 months.

The patient was re-examined and re-evaluated on a regular basis and followed the protocol provided by the physician. The plan of care was progressed as appropriate.
CHAPTER III
INTERVENTIONS

The plan of care set up at the initial evaluation followed a standard arthroscopic rotator cuff repair protocol resulting from evidence-based practice. The protocol, provided by the physician, stated to begin physical therapy at a frequency of 2-3 times per week for 6-10 weeks. PROM for 2 weeks, AAROM for 2 weeks, begin isometric exercises at week 5, and initiate resistive band exercises at week 7.

The patient was seen 3 days per week for 4 weeks and then two days per week for another 4 weeks. Each session was approximately 45 minutes long and consisted of therapeutic exercise, neuromuscular re-education, and manual therapy techniques. The first and second week's interventions consisted of passive range of motion (PROM) into forward elevation, external rotation (in scapular plane at 30°), and internal rotation (in scapular plane at 30°). All PROM was performed in a supine position. In order to prevent the arm from dropping into an extended position, the arm was placed on a towel roll. PROM was performed for approximately 30 minutes the first two weeks. Following PROM, active range of motion (AROM) of the elbow, wrist, and hand (all planes) was performed, as well as a seated upper trapezius (UT) and scalene stretches (gravity assisted), scapular adduction in sitting, and pendulum exercises (forward/backward, side to side, circles). During the pendulum exercise, the patient was instructed to use the motions of his hips to cause the motion at the
glenohumeral joint rather than AROM of the shoulder. The pendulum exercise is performed passively as to not damage the repaired rotator cuff tissue. Refer to Figure 1 for pendulum exercise. All the exercises listed, minus PROM, were part of the HEP provided to the patient. Stretches were held for 30 seconds and repeated 3 times. All other exercises were performed 3 sets of 10 repetitions. Education on proper use of sling, body mechanics, and posture were also provided. Patient’s spouse was present for initial session and was provided education on assisting spouse with interventions. Manual therapy techniques were not addressed due to healing precautions.

Figure 1. Pendulum Exercise
http://www.themanualtherapist.com/2016/08/the-safer-better-alternative-to.html

Phase II, starting in week 3, began with active assisted range of motion (AAROM) of the glenohumeral joint. Utilizing a PVC pipe approximately 4 feet in length, forward elevation and external rotation in a supine position were performed. The patient was instructed to push the affected arm until very mild discomfort
occurred as to not push too hard and damage the repair site. External rotation was
performed with the humerus placed in 30° of abduction and with the elbow resting
on a towel roll to prevent shoulder extension. AAROM with the PVC pipe was held 3-
5 seconds at mild discomfort range for 10-15 repetitions. During this second phase
of the rehabilitation process, the HEP of the previous phase (PROM, AROM of elbow,
wrists and hand, cervical stretches, and pendulums) were continued. Gentle
distraction (grade 2) was performed during PROM to provide pain relief during
movement. Positioning on a towel roll to maintain the humerus in a neutral position
was continued during all supine activities.

Phase III of the rehabilitation process started in week 5 by adding gentle
shoulder isometric strengthening exercises. These isometric exercises were
performed by pushing into a wall or doorframe (a pillow was used for comfort) and
consisted of external rotation, internal rotation, flexion, and extension as displayed
in Figure 2. Sub-maximal (25-50%) force was utilized when performing the
isometric exercises (5 repetitions with a 5 second hold). During this phase PROM,
AAROM, and the initial HEP was continued. Active range of motion (AROM) of the
glenohumeral joint in all planes as well as scapular stabilization intervention was
initiated in phase III. Scapular stabilization interventions started with the patient
laying supine while holding their arm straight out in front of them and the physical
therapist applying perturbations in a multidirectional pattern for 10-15 seconds as
the patient held that position. Perturbations work to regain the muscles reaction

time to outside forces. The arm was placed in multi-planar positions throughout the

exercise. Positioning the arm on towel roll remained the same for maintaining a

neutral position during supine therapeutic exercise and ROM.

The 4th and final phase was initiated in week 7 of the rehabilitation process.

Phase IV consisted of adding in resistive thera-band exercises for flexion, extension,

external rotation, and internal rotation (same motions as performed for isometric

exercises in phase three) where 2 sets of 10 repetitions were performed for each

motion using a light resistance band initially. Sets, repetitions, and level of

resistance were progressed, as the patient was able to tolerate. Continued use of

scapular stabilization exercises occurred in Phase IV. Scapular clocks using thera-

bands (Figure 3), over-head wall ball bounces, and using a rebounder were used for

stabilization interventions. Regaining control of the scapula-thoracic and scapula-

humeral muscles and normalizing the scapula-humeral rhythm was the key

component to Phase IV. Supine serratus punches, thera-band extension and

retraction, and lower trapezius exercises were all a part of the scapula-humeral

exercises performed. Refer to Figures 4 and 5 for scapula-humeral exercises. Phase

IV was cut short at the end of week 8 as the patient elected to discontinue physical

therapy services. The physician released the patient from further physical therapy

services after a follow up appointment during week 8 of the rehabilitation process.
The patient was still lacking full active range of motion (refer to table 4) due to decreased strength. The lack of motion was not due to pain or decreased tissue extensibility. The physician stated the patient would regain full AROM and strength if he continued the HEP and with functional use of the UE with every day activity.

**Figure 2. Shoulder Isometric Exercises**
https://clairenopgate.files.wordpress.com/2013/01/standing-wall-shoulder-exercises.gif

**Figure 3. Scapular Clock Exercise**
https://www.hep2go.com/exercises_editor.php?evid=29215&userRef=0
Figure 4. Supine Serratus Punch
http://www.empalife.com/serratus-anterior/

Figure 5. Thera-Band Extension
CHAPTER IV
OUTCOMES

The patient’s outcomes following the course of his 8-week physical therapy rehabilitation are not as expected due to the early termination of treatment. After the 2-month check up with the physician, the patient was cleared for home based exercise program and opted out of further physical therapy services. According to the physician, the patient had adequate strength and ROM and should make a full recovery if he continued to perform his HEP and through the every day use of his arm. The physician released the patient from PT and left the final decision up to the patient as to whether or not he wanted to continue PT services. The patient decided that he did not want to continue due to his shoulder feeling “good” and monetary reasons.

Following therapeutic interventions over the 8-week course, the patient demonstrated near normal range of motion (see Table 4) and function in his surgically repaired shoulder and a major decrease in pain. At the end of his PT, the patient rated his pain at a 0/10 at rest and during activity. A traditional manual muscle test was not performed and neither was the Quick DASH assessment given upon discharge from PT. He was able to perform anti-gravity range of motion exercises, estimated to be at least a 3/5 on a standard MMT. These two assessments were not performed due to the abrupt stop in the physical therapy services.
The patient was compliant with the HEP that was provided to him and did not miss any of his scheduled appointments throughout the course of the treatment. The patient regularly stated that the services being provided were of great help. The patient responded well to all the interventions provided throughout the course of the treatment and was very satisfied with the results. Ways to reduce the risk of re-injury and prevent new injuries from occurring were described and provided. This patient believed that he would be able to make a full recovery without PT services and was not worried about the potential for damage to the repaired rotator cuff.

<table>
<thead>
<tr>
<th>Table 6. Range of Motion in Degrees – Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discharge</strong></td>
</tr>
<tr>
<td>PROM - Abduction</td>
</tr>
<tr>
<td>PROM - Flexion</td>
</tr>
<tr>
<td>PROM - External Rotation</td>
</tr>
<tr>
<td>PROM - Internal Rotation</td>
</tr>
<tr>
<td>AROM - Abduction</td>
</tr>
<tr>
<td>AROM - Flexion</td>
</tr>
<tr>
<td>AROM - External Rotation</td>
</tr>
<tr>
<td>AROM - Internal Rotation</td>
</tr>
</tbody>
</table>
Discussion

Throughout the 8-week course of this physical therapy service, there were great improvements in ROM, strength, and overall function of the patient’s surgically repaired rotator cuff. Following the physician’s protocol, the patient performed strictly PROM for Phase I of the rehabilitation process (weeks 1 and 2) post-surgery. Then he was able to progress to AAROM with the use of a wand/cane in Phase II (weeks 3 and 4); AROM and gentle isometric strengthening of the rotator cuff muscles were initiated in Phase III (week 5); and finally, resistive thera-band exercises for shoulder flexion, extension, external rotation, and internal rotation in Phase IV (week 7). Upon discharge from PT, the patient still demonstrated minor compensatory movements during overhead AROM due to weakness in his scapular stabilizers and rotator cuff muscles. The weakness was not of concern for the patient and he believed would make a full recovery on his own.

According to the systematic review done by Silva, Cartucho, Sarmento, and Moura, patients older that 65 years of age who undergo surgical repair of a rotator cuff tear still have favorable improvement in clinical outcome scores and overall patient satisfaction. Even though the rehabilitation process was stopped earlier than intended, the patient was able to display near normal function of his operative shoulder and was satisfied with the results. A study by Rhee, Cho, and Yoo compared
the clinical outcomes and repair integrity of patients older than 70 and younger than 70. Their results showed that both groups had significant improvement in clinical outcomes following rotator cuff repair without significant difference between the two populations. Also, the re-tear rate did not have a significant increase with increasing in age. The patient in this case report was right on the edge of the populations in the previously mentioned study, so he does not have to worry about an increased risk of re-injury due to his age.

The examination and evaluation procedure helped identify the patient's problems and limitations, and thoroughly guided the plan of care and interventions provided. The patient in this case study responded to the physical therapy interventions consistent with findings in the literature. There were no complications that arose throughout the 8-week course of rehabilitation. A limitation of this study was that the patient opted out of PT services after his 2-month check up with the physician, prior to the plan of care being completed. Adequate strength was achieved, in order to be released from PT and it was anticipated that he would make a full recovery. Future research with a patient that completes the plan of care prior to discharge may be indicated.
Reflective Practice

The purpose of this case study was to look at the rehabilitation process of a 69-year-old patient following arthroscopic repair of a right rotator cuff tear.

Vital signs were not taken upon the initial examination and evaluation process. This would be important to perform due to the patient reporting HTN in his medical history. It is imperative to make sure that the patient's vitals are not contraindicated for beginning the rehabilitation process. It was stated that the patient's HTN was controlled by medication but it is standard treatment protocol to make sure all vitals are stable before treatment.

At this point in time, I would not make any changes to the post-surgical interventions that were provided. The patient demonstrated great improvement over the 8-week course of rehabilitation and was diligent about performing his HEP. No referrals to any other medical professional were needed. Further exploration into the differences between conservative treatment and arthroscopic repair of a torn rotator cuff would be beneficial, as well as evidence showing whether early or delayed rehabilitation following an arthroscopic rotator cuff repair give better results. This would be beneficial to know when to begin the physical therapy rehabilitation process; immediately following the surgical repair or after a few weeks of immobilization.
Following this rehabilitation process, I now have a better understanding and a more thorough comprehension of what is required and recommended to provide optimal care to patients with this disease process. I will be able to look back on this case study for future patients and know what worked well and what might need to be altered in the plan of care. Overall, I believe that this patient had a successful rehabilitation even with not completing the entire rehabilitation process.
References


