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Matthew Herring
Governors State University

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**MULTIMODAL PHYSICAL THERAPY MANAGEMENT OF A 24 YEAR-OLD
MALE WITH CHRONIC RETROCALCANEAL PAIN: A CASE REPORT**

By

Matthew Herring
B.S., Lewis University, 2006

Capstone Project

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Governors State University

University Park, IL 60484

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ABSTRACT

Background and Purpose: The multimodal approach reflects the type of individualized treatment commonly used in the clinical setting, in which many different interventions are available to the physical therapist. The purpose of this case report is to describe the physical therapy management process for a patient with chronic retrocalcaneal pain using a multimodal intervention approach.

Case Description: The patient was a 24 year-old male with chronic left retrocalcaneal pain. The patient's impairments included decreased left ankle dorsiflexion, decreased left talocrural joint mobility, left ankle swelling, and gait deviations. The patient's functional limitations included decreased ability to stand and walk for prolonged periods of time secondary to pain.

Outcomes: Left ankle dorsiflexion passive range of motion increased from 0-10° to 0-14°. Numeric Pain Rating Scale (NPRS) scores decreased from 8/10 to 3/10. Gait deviations were normalized. The patient reported improved functional mobility in school and work activities.

Discussion: Even though the specific etiology of retrocalcaneal pain could not be determined in clinic, positive outcomes were seen through a selection of interventions that addressed the patient's impairments and functional limitations.

INTRODUCTION

Retrocalcaneal, or posterior heel, pain is characterized by pain located in the area of the Achilles tendon insertion at the posterosuperior calcaneus. Retrocalcaneal pain is the second most common location of mechanically induced heel pain, with plantar heel pain being the first.¹ Retrocalcaneal pain can result from a number of different etiologies including insertional Achilles tendinopathy, retrocalcaneal bursitis, and Haglund's deformity.² It has been found that these pathologies can occur simultaneously in patients with retrocalcaneal pain.³ Because of this, differential diagnosis and selection of interventions by the physical therapist can be difficult for these patients. A better understanding of the etiology of retrocalcaneal pain can be used to help guide physical therapy management of this condition.

Achilles tendinopathy is an overuse clinical condition of the Achilles tendon, as described by Maffulli and colleagues,⁴ which is characterized by pain, swelling, and impaired performance. The presence of an inflammatory or degenerative condition of the Achilles tendon is not always clear in Achilles tendinopathy, unless histopathologically proven.⁴ Achilles tendinopathy has been categorized as insertional or midportional, with insertional tendinopathy presenting with symptoms at the calcaneal insertion.⁵ Insertional Achilles tendinopathy is common in middle-aged to older individuals who are overweight or not physically active.³ Insertional Achilles tendinopathy commonly occurs with insidious onset and frequently

leads to chronic retrocalcaneal pain and swelling.¹ Pain symptoms are found to be aggravated with increased activity and are commonly aggravated by the heel counter portion of the shoes.¹ Upon palpation, a bony prominence may be felt both medially and laterally to the Achilles tendon insertion and tenderness can present as centrally or globally over the posterior heel.¹ Radiographs may show ossification or bone spur at the Achilles tendon insertion and deviation in soft tissue contours along with calcaneal bony abnormalities via ultrasound imaging.⁶

Retrocalcaneal bursitis presents as swelling of the posterolateral heel superior to the calcaneus.⁶ The retrocalcaneal bursa lies anterior to the Achilles tendon insertion and posterior to the calcaneal tuberosity.⁷ Upon palpation, a posterolateral calcaneal prominence is commonly felt along with tenderness lateral to the Achilles tendon.¹ Studies have found that retrocalcaneal bursitis most commonly affects females between the ages of 20 to 30 years.¹ Based on the morphology of the retrocalcaneal bursa, ultrasound imaging is believed to be the best form of diagnostic evaluation for determining the presence of bursitis.⁷

Haglund's deformity is a bony prominence of the posterosuperior calcaneus that can cause inflammation of the retrocalcaneal bursa and predispose a person to the development of retrocalcaneal pain.⁸ Though radiographic analysis has been commonly used to identify Haglund's

deformity⁶, there is no single established method for quantifying this deformity in symptomatic individuals.⁸

Physical therapy management of patients with insertional Achilles tendinopathy and retrocalcaneal bursitis has not been well defined in the literature, but has been well established for patients with midportional Achilles tendinopathy.⁹ Clinical practice guidelines for midportional Achilles tendinopathy developed by Carcia and colleagues⁹ recommended the use of eccentric loading, low-level laser therapy, iontophoresis, foot orthoses, stretching, and manual therapy as interventions. It has been found that the use of eccentric loading has not been as successful in patients with insertional Achilles tendinopathy.¹⁰ With approximately half of the patients with insertional Achilles tendinopathy progress to having surgery⁵, there is a need for a better understanding of how to conservatively manage these conditions.

The purpose of this case report was to describe the physical therapy management process of a patient with chronic retrocalcaneal pain using a multimodal intervention approach. The plan of care for this patient was developed utilizing therapeutic exercise, stretching, manual therapy, and physical agents to address the patient's impairments and functional limitations. This multimodal approach reflects the type of individualized treatment commonly used in the clinical setting, in which many different interventions are available to the physical therapist.

CASE DESCRIPTION

Subject

The patient was a 24 year-old Caucasian male referred to physical therapy with chronic left retrocalcaneal pain. Symptoms were located at the posterior heel and ankle. He reported symptoms with insidious onset 1 year ago with an increase in intensity over the last three months prior to admission to physical therapy. He described symptoms as sharp upon initial weight bearing in the morning and after prolonged immobilization. He also reported discomfort and aching after prolonged activity and time spent on his feet. Pain symptoms were relieved with rest. He reported similar symptoms 3 years ago on the right lower extremity that subsided on their own.

The patient spent at least 8 hours a day on his feet between work as a restaurant manager and as a student in culinary school. Pain interfered with his performance at work and school, and limited his ability to walk or stand for long periods of time. He did not participate in athletic activities nor did he regularly exercise. The patient had no significant medical or surgical history that affected his physical therapy care and did not take any medications for his retrocalcaneal pain.

Bilateral foot X-rays were ordered by his primary care physician. The radiology report stated there was no fracture or dislocation, no cortical irregularity, no periosteal reaction, no opaque foreign bodies, and no

calcaneal enthesophytes visualized bilaterally. The patient was seen by a podiatrist, who issued him orthotic shoe inserts and referred him to physical therapy. The patient did not receive physical therapy services for this condition prior to this episode of care.

Systems Review

Integrity of the integumentary system revealed that the skin over both lower extremities appeared intact and of normal color, with no signs of pallor or rubor. The patient, being 24 years of age and of normal body morphology, was considered to be at low risk for cardiovascular or pulmonary system pathology. Neuromuscular system examination revealed intact light touch sensation over both lower extremities. Musculoskeletal system examination revealed decreased gross active range of motion limitations in left ankle dorsiflexion, as compared to the uninvolved side. Knee range of motion was within normal limits bilaterally. Gross muscle strength testing of the knees (flexion and extension) and ankles (flexion, extension, inversion, and eversion) were all within normal limits. Upon observation, soft tissue swelling was noted along the posterior aspect of the left ankle as compared to the uninvolved side. A bony prominence was visible bilaterally at the posterosuperior calcaneus that could be palpated on both the medial and lateral side of the Achilles tendon insertion.

Clinical Impression

Based on the location of the symptoms, the primary problems were believed to be related to a musculoskeletal pathology of soft tissues of the posterior heel. Based on X-ray imaging results, a fracture was ruled out. No bone spurs were visualized at Achilles tendon insertion, which would be indicative of insertional Achilles tendinopathy. Tenderness to palpation was not localized specifically to just Achilles tendon, calcaneus, or area of the retrocalcaneal bursa. Initial clinical findings warranted further orthopedic assessment of the lower extremity to determine the degree of the patient's impairments and functional limitation in order to help guide the selection of appropriate physical therapy interventions.

Examination: Tests and Measures

Range of Motion

During the initial examination the patient's active and passive ankle range of motion were measured using a standard goniometer. A systematic review of goniometric ankle measures by Martin and McPoil¹¹ found excellent intratester reliability (>0.90) and adequate interrater reliability (0.69).

Ankle measurements in plantarflexion and dorsiflexion were measured with the patient in supine, the knee flexed at least to 30° , and the subtalar joint in neutral position as described by Reese and colleagues.¹² Results for left

ankle dorsiflexion were; 0-6° actively and 0-10° passively. A summary of the range of motion testing results is shown in Table 1.

Table 1. Ankle range of motion results

		Ankle Range of Motion (Active, Passive)			
		Plantarflexion		Dorsiflexion	
		Left	Right	Left	Right
Initial Examination		0-70°, 0-80°	0-72°, 0-80°	0-6°, 0-10°	0-15°, 0-20°
Discharge		0-60°, 0-68°	NT	0-10°, 0-14°	NT

Ankle Passive Accessory Movement

The passive accessory movement of the talocrural and subtalar joints was assessed to determine the presence of laxity or restrictions affecting normal joint mobility. Based on the clinician’s assessment, the subtalar joint showed normal mobility bilaterally. Hypomobility was demonstrated on the left talocrural joint, with restriction of anterior-posterior glide of the talus compared to the uninvolved side

Ankle Girth Measurement

Swelling in the left lower extremity in the area of the posterior ankle was measured using the figure-8 method.¹³ Figure-8 ankle measurements have been shown to have excellent interrater reliability (ICC=0.98) and intrarater reliability (ICC = 0.99) on subjects with foot or ankle pathology.¹³

The girth measurement results for left and right ankle measured 55 cm and 53 cm, respectively.

Achilles Tendon Palpation Test

The presence of Achilles tendinopathy was examined using the Achilles tendon palpation test.¹⁴ This test has shown to have good intrarater ($r=0.90$) and interrater reliability ($r=0.90$), and good sensitivity to change for assessing severity of Achilles tendinopathy.¹⁴ This test was performed by gently squeezing the Achilles tendon with the thumb and index finger along the entire length of the tendon.¹⁴ A positive result, which was indicated by tenderness to palpation, was elicited on the left Achilles tendon. The tenderness was localized along the distal half of the left Achilles tendon, with the tenderness greater over the Achilles tendon insertion. Testing of the right Achilles tendon revealed a negative result, with no tenderness to palpation along the entire length of the tendon.

Pain Assessment

The numeric pain rating scale (NPRS) was used to assess the patient's pain levels.¹⁵ The NPRS is shown to have excellent interrater and intrarater reliability with 100 percent agreement between two raters using the tool.¹⁵ It has also shown to have good internal consistency ($\alpha = 0.88$), excellent criterion validity ($r = 0.86$ correlation with VAS), and significant sensitivity

to change in healthy populations.¹⁵ The patient was asked to rate his most intense pain experienced in the last 24 hours using an 11-point scale from 0-10, with 0 being no pain and 10 being the worst imaginable pain.¹⁵ Upon initial examination the patient reported a pain level of 8/10.

Gait Analysis

Observational gait analysis was used to assess the quality of the patient's gait. Gait was analyzed to assess for deviations during the gait cycle. Though a standardized measure or video analysis to assess gait would have allowed for better quantification of gait deviations, this is not always practical in the clinical setting. Observational gait analysis has shown to be a valid measure of gait variability when compared to a gold standard computerized walkway.¹⁶ Gait analysis revealed early heel-off on the left side during late stance phase and overall shortened stance time on left extremity. This deviation was believed to be caused by pain and decreased dorsiflexion of the left ankle.

Evaluation

Based on the data from the examination the patient's impairments included decreased left ankle dorsiflexion, decreased left talocrural joint mobility, left ankle swelling, and gait deviations. The functional limitation experienced by the patient involved his decreased ability to stand and walk

for prolonged periods of time secondary to pain. The interventions were selected to address these impairments. As previously mentioned, retrocalcaneal pain can result from a number of different etiologies including insertional Achilles tendinopathy, retrocalcaneal bursitis, and Haglund's deformity.² The examination results are indicative of the presence of insertional Achilles tendinopathy with possible retrocalcaneal bursitis. Since no ultrasound imaging was performed, the presence of bursitis could not be confirmed. Though a visual bony prominence was seen on both ankles, there was no specific testing for Haglund's deformity reported on the radiograph results. Therefore, the presence of Haglund's deformity could not be ruled in or out.

Diagnosis and Prognosis

The medical diagnosis determined by the ordering physician was pain in limb (ICD-9-CM: 729.5). Based on the *Guide to Physical Therapist Practice*¹⁷, the physical therapy diagnosis falls under Practice Pattern 4D: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Connective Tissue Dysfunction. Retrocalcaneal bursitis and insertional Achilles tendinopathy were both considered to be causes for the patient's retrocalcaneal pain. The prognosis for patients in this practice pattern is 2 weeks to 6 months and 3 to 36 visits in which the patient should be expected to reach optimal joint mobility, muscle

performance, range of motion, and highest level of function in home, work, community, and leisure environments.¹⁷ The initial order for physical therapy approved for the patient to be seen for a total of 6 treatment sessions. At the end of 6 sessions the patient was re-evaluated to determine if further therapy was needed.

Plan of Care

The patient was seen for physical therapy for a total of six treatment sessions, including the initial examination. The frequency of sessions was two times a week for three weeks. A multimodal approach was used to address the patient's impairments and functional limitations. To monitor the patient's progress during physical therapy the following goals for the patient were established upon completion of the initial examination. In order to improve performance at school and work the goal was to decrease the patient's pain from 8/10 to 2/10 on the NPRS scale. In order to normalize gait deviations the goal was to increase left ankle dorsiflexion passive range of motion from 0-10° to 0-15° degrees. In order to restore normal tissue function the goal was to decrease L ankle swelling by 1.5 cm, as measured with the figure-8 method.

INTERVENTIONS

Early treatment sessions focused on managing the patient’s symptoms and decreasing stress on the Achilles tendon through the use of modalities, soft tissue mobilization, along with light stretching and exercise. As the patient progressed, the focus was on restoring range of motion of the ankle joint and normalizing gait through the use of eccentric loading and more aggressive stretching and joint mobilization. A summary of the interventions performed and their frequency is summarized Table 2.

Table 2. Summary of interventions

	Therapeutic Exercise/ Stretching	Ultrasound	Iontophoresis	Joint Mobilization	Soft Tissue Mobilization
Session 1	✓	✓	✗	✗	✓
Session 2	✓	✗	✓	✓	✓
Session 3	✓	✗	✓	✗	✓
Session 4	✓	✓	✓	✓	✓
Session 5	✓	✓	✓	✓	✓
Session 6	✓	✓	✓	✗	✓

✓ = Performed ✗ = Not Performed

Achilles Tendon Stretching

A progressive stretching program was utilized as an intervention for the patient’s retrocalcaneal pain. Despite there being little evidence supporting the use of stretching for Achilles tendinopathy¹⁸, a stretching program along with the use of an AFO has been shown to improve function in patients with retrocalcaneal pain.² The patient performed a progressive

Achilles tendon stretching program that was performed during each session and also as part of a home exercise program. A summary of the type of stretches performed is summarized in Table 3. The intensity of stretching was increased based on the patient's response and progressed from non-weight bearing positions to full weight bearing. Stretching was performed during all six sessions. Regarding the selection of duration and frequency of stretching interventions, a randomized, blinded, control study by Porter and colleagues¹⁹ found no significant difference in the effectiveness of sustained or intermittent stretching of the Achilles tendon in patients with painful heel syndrome. The patient preferred to perform intermittent stretching, as he would perform them throughout the day while at work and school. An intermittent stretching technique was utilized throughout the episode of care by performing 5 sets, for a 20 second hold each set.

The patient reported acute pain upon initial weight bearing in the morning. He was educated on the importance of stretching the Achilles tendon prior to getting out of bed in the morning. Due to the foot being in a plantarflexed position for a prolonged period during sleep, the ankle tissues can become shortened overnight. The use of a night splint to prevent tissue shortening during sleep has been effective in subjects with Achilles tendinopathy.²⁰ Light tissue stretching prior to weight bearing was used to help increase the length of the gastrocnemius-soleus and Achilles tendon tissues in order to decrease strain on the Achilles tendon insertion.

Therapeutic Exercise

Therapeutic exercise of the ankle dorsiflexors and plantarflexors was performed. Despite showing no significant difference when compared to conventional physical therapy in subjects with insertional Achilles tendinopathy²¹, eccentric exercise has been shown to reduce pain and improve function in athletic subjects with midportional Achilles tendinopathy.²⁰ In this case, both concentric and eccentric exercises were utilized. Refer to Table 3 for a summary of frequency and duration of exercises performed during the patient's plan of care. Over the course of the six visits the difficulty of the exercise progressed from open-chain to closed-chain loading using body weight as resistance. Some exercises were also performed by the patient as part of a home exercise program, in which the patient was instructed to complete twice a day. The patient reported being compliant with the stretching and home exercise program throughout the episode of care.

Table 3. Exercise and stretching program

Stretch	Frequency	Duration	Action
Dorsiflexion Towel Stretch	HEP	20 sec hold, 5 repetitions	Wrap the center of a towel around the metatarsal heads of the foot. Keeping the knee fully extended, pull both ends of the towel brining the ankle into dorsiflexion. Performed on leg left.
Gastrocnemius Wall Stretch	HEP	20 sec hold, 5 repetitions	Stand in front of wall with one leg forward and one leg back. Keeping back leg straight and heel on the ground, lean forward, bending the front knee. Performed on left leg.
Soleus Wall Stretch	HEP	20 sec hold, 5 repetitions	Stand in front of wall with one leg forward and one leg back. With the back leg bent, learn weight over back foot, keeping heel on ground. Performed on left leg.
Slant Board Stretch	Sessions 2, 3, 4	20 sec hold, 5 repetitions	Stand with both feet on slant board. Keeping heels on the board and knees fully extended, learn forward until a stretch is felt on the posterior lower extremity muscles.
Dorsiflexion Manual Stretch	Sessions 2, 4, 5	20 sec hold, 5 repetitions	Manual force into ankle dorsiflexion applied by the therapist with the patient positioned in supine with the knee fully extended. Performed on left leg.
Dorsiflexion Self Mobilization	Sessions 5, 6	20 sec hold, 5 repetitions	Get into half-kneeling position with ankle to be stretched placed forward and flat on the ground. Place a dowel rod on the ground outside the front of the forward foot but inside the knee. Lean weight forward over the front ankle into dorsiflexion, keeping the foot flat on the ground. Use the dowel to keep the knee in a neutral alignment over the foot. Performed on left leg.
Exercise	Frequency	Duration	Action
Band Resisted Ankle	Sessions 1, 3, HEP	10 repetitions, 2 sets	Resisted ankle exercise in dorsiflexion and plantarflexion using green Theraband
Rocker Board	Sessions 2, 3, 4	3 minutes	Stand with both feet shoulder width apart on rocker board. With control, slowly rock the board forward and backward. Repeat rocking the board left and right.
Recumbent Bike	Sessions 2, 3, 4	8 minutes	Continuous pedaling with minimal resistance.
Heel/Toe Raises	Sessions 5, 6, HEP	20 repetitions	Bilateral heel and toe raises in standing.
Bilateral Calf Raise Eccentric	Sessions 5, 6, HEP	20 repetitions	Stand at edge of step on toes with both heels hanging over edge. Raise up on toes and slowly lower heels down, letting them dip below the edge of step.

HEP = home exercise program, performed 2x/day

Manual Therapy

The patient's decreased left ankle dorsiflexion range of motion and pain was also addressed with soft tissue mobilization techniques. A single case study design reported an increase in dorsiflexion range of motion and decrease in pain following intervention with soft tissue mobilization on a subject with Achilles tendinosis.²² In this case, soft tissue mobilization techniques were utilized in all six therapy sessions. Cross-friction massage was performed to the Achilles tendon along its entire length. Trigger point

release techniques were utilized at the lateral head of the gastrocnemius muscle belly.

Passive joint mobilization techniques in the form of anterior-posterior glides to the talus were applied in a grade III oscillatory technique as described by Maitland²³ with the aim of increasing joint mobility and ankle dorsiflexion range of motion. No studies were found showing the effectiveness of passive joint mobilizations to increase dorsiflexion in subjects with retrocalcaneal pain, but have shown to increase pain-free dorsiflexion in subjects with acute ankle inversion sprain.²⁴ Passive mobilizations were applied during sessions 2, 4, 5 at an intensity of one oscillation per second, for a duration of 30 seconds each application. Mobilizations were applied prior to stretching and exercise interventions in order to help facilitate joint mobility and retrain the proprioceptors of the ankle to move in the new available range of motion.

Physical Agents

Iontophoresis is used for the localized transfer of an ionized substance through the skin and into a target tissue.²⁵ A double-blind study by Neeter and colleagues²⁶ evaluated the effects of iontophoresis with dexamethasone in the treatment of Achilles tendon pain showed significant improvements in range of motion, pain with activity, morning stiffness, and swelling when compared to the control group. Dexamethasone sodium phosphate (DEX) is

used for its anti-inflammatory properties. In this case, the target tissue was localized over the patient's left Achilles tendon insertion and retrocalcaneal bursa. Iontophoresis dosage per application was 2.0 cc of DEX at 4.0 mA intensity and 10 minutes in duration. The Iontophoresis was applied once each session during sessions 2 thru 6.

Ultrasound was used to increase the tissue temperature with the goal of increasing the tissue extensibility to facilitate tissue lengthening when followed by stretching. Ultrasound combined with static stretching has been reported to increase dorsiflexion range of motion greater than static stretching alone.²⁷ In this case, continuous ultrasound at a frequency of 1 Hz was applied to the Achilles tendon at an intensity of 1.5 W/cm² for eight minutes during sessions 1, 4, 5, and 6.

OUTCOMES

The patient was re-evaluated during his 6th, and final, session of physical therapy. Left ankle dorsiflexion range of motion increased from 0-6° to 0-10° actively, and 0-10° to 0-14° passively. Left ankle girth using the figure 8 measurement at discharge was 55 cm, which was no change from initial evaluation. Achilles tendon palpation test results on the left, which was positive at initial evaluation, was negative at discharge. Tenderness to palpation was no longer present over the left Achilles tendon along its entire length and insertion. Observational gait analysis at

discharge showed significant decrease in gait deviations. Left heel-off occurred later in the stance phase, which increase stance time on left lower extremity. Pain levels decreased from 8/10 to 3/10. The patient reported improved mobility at work and school due to less pain. A summary of pain, range of motion, and girth with percent change can be found in Table 4.

Table 4. Summary of outcomes

	Initial Examination	Discharge	Difference	Percent Change
Pain level	8/10	3/10	-5	-62.5%
Left Ankle Dorsiflexion (active, passive)	0-6°, 0-10°	0-10°, 0-14°	+4°, +4°	+66.6%, +40%
Left Ankle Girth	55 cm	55 cm	0	0.00%

DISCUSSION

The goal to decrease the patient’s pain from 8/10 to 2/10 on the NPRS scale was not reached. Despite this, at discharge the patient rated his worst pain in the last 24 hours to be 3/10 on the NPRS. This showed a 62.5% decrease in pain from the initial examination. This represents a clinically significant change in pain levels. A study on patients with chronic musculoskeletal pain found a change of 1 point to represent a meaningful clinically important difference.²⁸

At discharge, the patient’s left ankle dorsiflexion passive range of motion showed a 4° increase, representing a 40% increase from initial

examination. The goal to increase passive range of motion to 0-15° was not met. Healthy younger populations have shown to use a mean of 22° of ankle dorsiflexion during normal walking gait²⁹, but other sources have reported that only 10° is required to perform functional activities.¹² The reason for increasing the ankle dorsiflexion was to normalize the patient's gait deviations, which was exhibited in the patient's increase in stance time on the left extremity and heel-off occurring later in the stance phase. This improvement helped the patient decrease his functional limitations and improved his participation in work and school activities that required prolonged time up on his feet and walking.

Ankle girth measurements at discharge did not show change from the initial examination. Based on these results, swelling on the left ankle did not decrease. Despite this, the patient no longer exhibited tenderness to palpation, as seen by a negative results on the Achilles tendon palpation test. The increase in girth on the left side was not localized to a specific area, but was present globally over the posterior ankle. It is possible the difference in girth measurements between extremities may have not been due to swelling, but instead a normal physical discrepancy for this patient.

Based on the outcomes, it was determined by the clinician that the patient would be discharged from therapy with a prescription to continue with his home exercise program. The patient stated that he was compliant with his home exercise program throughout the episode of care. The

importance of continuing the program was understood by the patient. Due to the patient's motivation to return to work and school activities pain-free, and based on progress made during his episode of care, it was determined that the patient no longer required physical therapy services in order to reach his optimal level of function.

Regarding the limitations of this case report, the use of a standardized outcome measure may have proven to be a more quantifiable measure of data on the patient's response to treatment. The Victorian Institute of Sport Assessment (VISA-A) is a reliable and valid measure to assess the severity of Achilles tendinopathy.³⁰ This measure could have been used at initial examination and during re-evaluation to quantify the patient's progress to help determine if goals were being met.

Additionally, a greater number of data points would provide more information on the patient's progress and response to interventions. Range of motion was visually assessed by the clinician each session, but goniometry was only used at the initial examination and at discharge. More thorough data on the patient's pain levels could have been recorded. Pain was continually assessed each session during therapy, but this data was not recorded. Being a retrospective case report, these oversights were not discovered until after the plan of care was already completed.

As previously mentioned, an eccentric training exercise program has been effective in patients with midportional Achilles tendinopathy, but less

successful in patients with insertional Achilles tendinopathy.¹⁰ The reason for this difference has been investigated in a study by Jonsson and colleagues³ in which they proposed that performing exercise into dorsiflexion caused impingement between the Achilles tendon, retrocalcaneal bursa, and calcaneus. They found significant reduction in pain levels in patients with chronic insertional Achilles tendinopathy after performing an eccentric training program without ankle dorsiflexion.³ Despite this, the patient in this case report did have successful outcomes utilizing eccentric exercises into dorsiflexion as part of the exercise program. Both eccentric and concentric exercises were utilized with the patient in this case report. Changing the eccentric portion of the exercise program so that it was performed without dorsiflexion may have yielded better outcomes for the patient.

A study by Chimenti and colleagues⁵ evaluated the tendon mechanical properties in subjects with insertional Achilles tendinopathy. They found that subjects with insertional Achilles tendinopathy exhibited higher tendon strain during passive stretching as compared to the uninvolved extremity. Based on their results, they proposed that stretching may not be an effective intervention for patients with insertional Achilles tendinopathy, as it increases strain on a tendon that already exhibits properties of higher strain.⁵ Despite these results, the patient in this case report had successful outcomes using a progressive stretching program. Because a multimodal approach was used, it was difficult to determine the effects that each specific

intervention had on the patient's outcomes. The use of physical agents and manual therapy techniques prior to Achilles tendon stretching could have had an effect on the outcomes.

The purpose of this case report was to describe the physical therapy management process of a patient with chronic retrocalcaneal pain using a multimodal intervention approach. Even though the specific etiology of retrocalcaneal pain could not be determined in the clinic, positive outcomes were seen. A multimodal approach was an effective means of addressing the patient's impairments and functional limitations due to retrocalcaneal pain. While it is not clear which interventions were the most effective at reaching these outcomes, further studies could look into the effect of a multimodal intervention approach in a larger, more controlled study design. Using fewer interventions in this case study would have made the effects of each specific intervention more clear, but may have also changed the patient's outcomes. This multimodal approach will help provide insight into everyday clinical practice and raise questions for future research studies aimed at finding the best intervention approach to the treatment of retrocalcaneal pain.

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