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Hip adductor or iliopsoas tendonitis in an adolescent athlete: a physical therapy case report

Julie Berry
University of North Dakota

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HIP ADDUCTOR OR ILIOPSOAS TENDONITIS IN AN ADOLESCENT ATHLETE—A PHYSICAL THERAPY CASE REPORT

by

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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
December, 2007
This Scholarly Project, submitted by Julie Berry 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**

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Date  

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ACKNOWLEDGEMENTS

I would like to thank my husband for all of his support, patience and encouragement in pursuing my doctorate degree.
ABSTRACT

Groin pain can be caused by many different entities from a “pulled adductor muscle” to something as serious as a femoral neck stress fracture. Other possible diagnoses include slipped capital epiphysis, avulsion fractures, osteitis pubis, osteoarthritis, labral tear adductor tendonitis and hernia. Iliopsoas tendonitis is an under-diagnosed clinical problem. This injury affects millions of athletes every year and is often misdiagnosed and not properly treated. Potential implications to function include a decrease in the ability to perform activities of daily living (dressing, transferring into and out of bed/car/chair, and climbing stairs), inability to control inflammation which could progress to further injury and even re-injury when return to activity occurs too soon.

The role of the physical therapist includes intervening in the healing process by identifying the proper diagnosis or referring to the physician in the event the symptoms are inconsistent with a physical therapy diagnosis. The physical therapist plays an integral role in the proper diagnosis and treatment including identifying the weak structures, implementing a strengthening program, and assuring prevention of future injury. The goal of the patient and the physical therapist are the same: to create a pain-free environment for the patient and allow him or her to return to their previous activity level pain-free. The purpose of this scholarly project is to document the role of physical therapy for iliopsoas tendonitis using a young athlete as a case study.
CHAPTER I

Introduction/Review of Literature

The hip is one of the largest and most stable joints in the body which allows for locomotion. Diagnosing hip injuries is challenging due to the vague, nonspecific signs and symptoms that may or may not occur at the hip joint. There are many intrinsic and extrinsic factors that may affect the hip anatomy. When a patient presents with complaints of hip pain, it is important to perform a complete assessment including differential diagnosis screening for system involvement. It is important to screen the lumbar spine and knee as both may refer pain to the hip joint. Early in the physical therapy intervention it is important to decrease pain, inflammation and restore functional ROM and strength to allow the patient to tolerate performing activities. This will allow the patient to return to their previous functional activity level without fear of re-injury.

Hip pain is a very common and frustrating problem, especially if the initial diagnosis is late or incorrect. Some of the most common diagnoses of hip dysfunction include adductor strain or tendonitis, osteitis pubis, labral tear and sports hernia. In addition, other differential diagnoses such as nerve pain, stress fracture and intrinsic hip pathology must be considered due to the significant overlap of signs and symptoms among these pathologies. Classic diagnostic signs and symptoms of adductor tendonitis are unilateral pain near the attachment on the pubic bone, provocation of pain by isometric hip adduction and pain to palpation of the involved tendon. If the signs and
symptoms include bilateral groin pain, pain located at the posterior aspect of the pelvis and a positive Active Straight Leg Raise (ASLR) test do not logically fit the diagnosis of adductor tendonitis, additional testing should be performed. Adductor injuries which have been linked to hip muscle weakness, previous injuries to the area, preseason practice sessions and level of experience-- may be preventable if such risk factors can be addressed before each session. Accurate and early diagnosis leads to directed treatment resulting in focused, functional rehabilitation incorporating closed-chain strengthening and core stability.

An in-season adductor muscle strain may be debilitating for the athlete. Groin pain is a common and often frustrating problem in athletes who engage in sports involving kicking, rapid accelerations and decelerations, and sudden direction changes. Furthermore, an adductor strain that is treated improperly could become chronic and career threatening. Any one of the six muscles of the adductor group could be involved. The degree of injury can range from a minor strain (Grade I- few fibers stretched/torn), where minimal playing time is lost, to a severe strain (Grade III) in which there is complete loss of muscle function. The grading scale (1-5) for a muscle strain involves a manual muscle strength test performed by a medical professional to assess the strength and function of each muscle group.

Clinicians feel an active training program that completely restores the strength of the adductor muscle group, is the key to successful rehabilitation. A study by Tyler (2001) closely followed a National Hockey League ice hockey team where hip strengthening exercises were shown to be an effective method of reducing the incidence of adductor strains. The study included an adductor muscle strain injury program that
progressed the athletes through the phases of healing. This type of treatment and rehabilitation program which combines modalities and passive treatment immediately, followed by an active training program emphasizing both eccentric and concentric strengthening has been supported throughout literature.\textsuperscript{17,18} This case study demonstrates how early diagnosis and specific training can expedite the rehabilitation and recovery of a client with an adductor strain.
CHAPTER II

CASE DESCRIPTION

Examination, Evaluation and Diagnosis

A 17-year old male basketball player presented to physical therapy with complaints of left sided groin pain and radicular sartorius pain that started approximately 2 weeks prior to initial evaluation. During the patient interview, he stated that when cutting to the right during a basketball practice (pushing off of the left lower extremity), he felt a "pull" in his left groin area. The patient was able to finish practice but noted increased difficulty transferring his left lower extremity into and out of a car. The patient did not seek medical treatment at that time and symptoms worsened overnight and through the next couple of weeks. The patient referred himself to our facility on 1/12/06, as allowed by the North Dakota practice act. The client denied any history of left lower extremity injuries. His main complaint was left sided groin pain with radicular left distal sartorius pain, and decreased strength of the left hip and knee. The patient described the pain as "stiffness" or 2/10 at rest and "sharp" or 8/10 with active range of motion (AROM) of the left hip and knee. Difficulty in performing activities of daily living, transfers into and out of a vehicle, and ascending and descending stairs with reciprocal gait was reported by the patient. Nightly sleeping was achievable but the patient stated he had difficulty finding a comfortable position to sleep.
The patient's history and past medical information did not identify any significant medical history. He denied developmental, family health or psychological issues. The patient also denied the use of any alcohol, drugs or smoking but states he does participate in daily physical fitness activities (i.e. currently high school basketball). The patient is not employed but lives on a small family farm with both parents and two other siblings. The patient assists in caring for several cows and horses at the home and reports he feels safe in his home and does not require any use of assistive devices at this time. There is no report of being treated for left hip/groin pain previously to this injury and has never seen a physical therapist prior to this injury for any other reason. The patient and family goals include returning to his previous activity level pain-free and the ability to regain previous strength and AROM of the left hip and knee.

At the initial visit the patient stated he was not taking any prescription medication but was using over-the-counter ibuprofen for pain. The patient stated that the ibuprofen took the edge off the pain but did not resolve the pain. Prior to seeing the physical therapist, the patient had visited an orthopedic physician and was prescribed hydrocodone for pain and inflammation. Hydrocodone is considered a narcotic analgesic. Side effects pertinent to physical therapy include increasing the effects of other drugs that cause drowsiness, dizziness or sedation. Hydrocodone may also cause constipation, an allergic reaction, slow and labored breathing, seizures, cold or clammy skin, severe weakness/dizziness, unconsciousness, yellowing of skin or eyes, unusual fatigue, and bleeding or bruising.¹ These side effects may be pertinent to physical therapy because the patient may not be able to perform his exercises, which would affect his overall outcome. During the initial examination, the patient ambulated to the physical therapy
department independently without an assistive device. Moderate guarding of his left hip region with weight bearing as tolerated (WBAT) on the left lower extremity was observed during gait assessment. Observation of the anterior left hip and thigh revealed no redness, ecchymosis or edema. Palpation of the left hip and thigh musculature revealed no warmth to touch but moderate tenderness over the iliopsoas major insertion, proximal and distal sartorius muscle origin and insertion were observed. Left hip and knee AROM was measured with a goniometer in supine position (See Table 1).

<table>
<thead>
<tr>
<th>Active Motion</th>
<th>Left</th>
<th>Right</th>
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<tbody>
<tr>
<td>Flexion</td>
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<td>Extension</td>
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<td>40</td>
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<tr>
<td>Internal Rotation</td>
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Bilateral knee AROM was considered within functional limits (WFL). Bilateral hip and knee strength was tested with resisted isometrics for flexion, extension, abduction, external rotation and internal rotation. Left hip extension, abduction and external rotation were 5/5, internal rotation was 4+/5 and flexion was 3+/5 with increased pain during resistance. Left knee strength was 4/5 for knee extension and 5/5 for flexion. Right hip and knee strength was 5/5 for all respective muscle groups. A notable decrease in left hip flexion, internal rotation and knee extension strength is consistent with involvement of the quadriceps and hip flexor musculature. Special tests were performed for specific hip and knee structures. The Faber test was positive with limited motion into flexion, abduction and external rotation, isometric hip adduction was positive for pain,
Trendelenberg’s sign was negative, the Thomas test was positive with a hip flexor contracture of 15 degrees, the ASLR was positive with pain during hip flexion. Valgus and varus stress tests, McMurry’s test and Anterior Drawer test were all negative at the knee joint. A study by Holmich reported the adductor isometric test to have a sensitivity of 40% and specificity of 88%. A study of the reliability of goniometric measurements for hip ROM by Holm demonstrated correlation coefficient for reliability of 0.77 to 0.83. The reliability of the Ober test was found to have a correlation coefficient of 0.91 in a study conducted by Reese. Finally, Patrick’s FABER test has a correlation coefficient of 0.93 as reported in a study by Ross. In a study of 117 elite athletes, Harvey et al reported the normal end position for the Thomas test was 12 degrees from horizontal for the femur position, 52 degrees of knee flexion and 15 degrees of hip abduction relative to the pelvis. The test had an intraclass correlation coefficient of 0.91 to 0.94 which is a very high rating, suggesting the modified Thomas test was a gold standard test in measuring the flexibility of the hip and knee musculature.

A systems review was performed to assess the client’s anatomical and physiological status, communication/affect/cognition/language status and learning style status prior to implementation of an intervention program. The cardiopulmonary system assessment revealed normal vital signs: blood pressure (right arm) of 115/85 mmHg, heart rate of 82 beats per minute, and respiratory rate of 12 breaths per minute. Assessment of the integumentary system revealed mild edema present over the left hip and groin region, no scar formation in the left lower extremity, skin color and integrity were considered normal. Height and weight were not assessed. Assessment of gross coordinated movements in the neuromuscular system revealed normal motion and coordination. The
client displayed good static and dynamic balance in standing (single leg stance with eyes closed) and sitting. The patient did have difficulty transferring his left lower extremity onto the treatment table and was unable to lie on his left side due to pain. The patient performed transitions with guarded movements. Finally, assessment of the communication/affect/cognition/language and learning style status observed the client to communicate verbally and able to understand all instruction provided to him. This patient was alert and oriented to time, place and person. He had appropriate and expected emotional and behavioral responses to tests and measures. This patient did not show any learning preference needs or barriers and was able to verbally state his of acceptance of treatment. The patient utilized the learning style in the psychomotor domain in which the education was given during this treatment episode. The mechanism of delivery was through demonstration and handouts. Patient education at the initial evaluation and treatment included the patient being educated on the anatomy, diagnosis, treatment process and effects of modalities. He was also educated on therapeutic exercise, short and long term goals and a plan of care. Proficiency and retention of the information was assessed by the patient’s familiarity of the home exercise program and ice/heat at home by oral communication and physical demonstration.

The evaluation consisted of a synthesis of examination findings, chronicity/severity of the problem, and impairments/functional limitations. The synthesis of examination findings included a decrease in left hip AROM and strength, an increase in pain with transfers, tenderness over the left iliopsoas/sartorious insertion and adductor muscle belly, radiating pain into the distal quadriceps musculature without the presence of numbness or tingling and no other significant medical history. Although there are a few
diagnoses associated with the examination findings, the client’s presentation is most consistent with iliopsoas or adductor muscle strain or tendonitis. Impairments for the left hip include decreased AROM, decreased strength, inflammation of periarticular connective tissue and pain. The functional limitations included difficulty with transfers, antalgic gait and inability to perform functional activities due to localized joint pain. The impairment would be included in the ICD-9 Code as number 726.5. The physical therapy diagnosis for this particular patient is 4E: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Localized Inflammation.

Due to the severity of the pain and impairment, the 17-year old male high school student was unable to participate in a high school sporting activity. The impairment had limited activity so that the client was unable to participate in practice or games for the previous 1-2 weeks. In addition, there was a direct effect on the client’s activities of daily living represented by the difficulty with transferring into and out of vehicles and falling asleep due to pain. The intense pain had continued for 3 weeks and since the patient had not seen a physician before initiating physical therapy he was instructed to follow up with an orthopedic physician to rule out a more insidious diagnosis. A magnetic resonance imaging test (MRI) revealed tendonitis of the iliopsoas/adductor musculature. The orthopedic physician documented the absence of a “sports” hernia or labral tear of the acetabulum. The physician’s plan of care instructed the patient to continue conservative treatment with physical therapy and to progress per patient tolerance in returning to his previous activity level following the instruction of the physical therapist. Within 4 weeks the patient was able to return to the previous activity level pain-free and had met all of his goals.
Prognosis and Plan of Care

The patient in this particular case study is a young high school student without significant medical history, apparently healthy, active in high school activities, who is compliant with his restricted activity and home exercise program during therapy. An article by Nicholas and Tyler (2002) describes a non-operative rehabilitation protocol that can be divided into 4 stages, revealing an expected potential for recovery for an adductor tendonitis/strain. Stage I is designed to limit the swelling and prevent further injury. This involves rest, ice, compression and necessary modalities. Protected weight bearing may also be necessary depending on the severity of the injury. This stage may last two days to one week. Stage II is based on limiting atrophy and restoring range of motion. Gentle passive and active assisted range of motion is begun (limited by pain) and modalities are continued as needed. Stage III begins when the patient has nearly full, pain free range of motion. This phase is based on regaining strength, flexibility and endurance. First isometric and then isokinetic exercises are begun, progressing resistance and volume of training per patient tolerance. The final stage includes proprioceptive training, agility drills and sport specific training designed to return the athlete to his or her sport. This stage begins when the athlete has reached 70% of their normal strength and is pain free. General goals for this patient over the course of 4 weeks, were to demonstrate optimal joint mobility, motor function, muscle performance, and range of motion and the highest level of functioning in home, work (school), community, and leisure environments. He will be able to return to his previous activity level and participation in high school activities. Specific goals and expected outcomes include
short-term goals to be completed within two weeks: 1. Decrease pain by 50% (with activity) to allow the patient to perform ADL’s with minimal pain, 2. Increase left hip AROM to within functional limits allowing him to transfer without difficulty, 3. Increase left hip strength by one grade to allow the patient to perform physical actions, tasks or activities related to self-care, home management, work (job/school/play), community, and leisure. Long-term goals to be completed in four weeks include: 1. the patient returning his left hip strength to 5/5 throughout all hip and knee musculature and 2. the patient being able to return to previous physical activity level pain free and to allow a decrease in recurrence of physical impairment. The APTA Guide to Physical Therapy Practice states that the expected length of recovery is two to four months in which the patient will return to previous functional level. The APTA guide also gives a range of six to twenty-four physical therapy visits to achieve these goals.

Intervention

After the initial examination and evaluation, the most appropriate intervention was determined after reviewing journals, books, protocols and clinical examination. The intervention included 2-3 times per week for 30-minute sessions for a total of 10 visits within 4 weeks. The first week’s interventions involved pain-relieving modalities including 1 MHz ultrasound for 8 minutes using an intensity of 1.2 W/cm² over the left anterior inferior iliac spine (AIIS) and anterior left hip region. This was followed by premodulated electrical stimulation with an ice pack for 15 minutes to the AIIS area and distal sartorius insertion with pad placement including: 1st set of pads with proximal pad placed superior to left AIIS and 2nd pad placed near left adductor tubercle, and 2nd set of pads with 1st pad placed over left distal sartorius muscle (approximately 8 cm superior
to patella) and 2nd pad over distal sartorius insertion on left medial knee joint (see Figure-1).

**Figure 1** Electrode placement for electrical stimulation treatment.
There are different modalities available for pain and swelling reduction. An effective method of reducing pain and edema is the application of electrical stimulation and ultrasound in the acute stage of the injury. A study by Johnson (2003) showed that electrical stimulation was more effective in reducing analgesic pain versus a sham electrical stimulation in a group of 30 subjects. A meta-analysis by Gam (1995) including 293 papers showed that ultrasound improved pain and range of motion in acute periarticular disorders compared to no modality use. Combining modalities (electrical stimulation and ultrasound) in the early stages of injury can be beneficial in decreasing
pain and swelling thus allowing the patient to initiate the next phase of rehabilitation.\textsuperscript{2,3} The ultrasound and electrical stimulation were gradually discontinued throughout the treatment sessions as the patient’s overall pain decreased and activity tolerance increased.

The patient was instructed in a home exercise program (HEP) involving supine hamstring and piriformis stretching, strengthening exercises of quadriceps sets and pelvic tilts (see Figure 2-4 for all HEP). The patient was instructed to passively stretch the left hip flexor musculature until the next visit. The HEP was to be performed 2 times a day for 5-10 repetitions for a hold time of 5 seconds. The patient was able to verbally communicate and demonstrate his understanding of the HEP.

The second week of treatment included a continuation of pain-relieving modalities of ultrasound (previously noted settings), electrical stimulation (previously settings) and hot-pack, the patient reviewed the HEP of stretching and strengthening exercises. He was then instructed on additional strengthening exercises including supine heel slides and short arc quadriceps sets. The patient performed a trial of straight leg raises (SLR) and reported increased pain (8/10) during the exercise. The SLR was again attempted after two additional visits (within one week), the patient was then able to perform the SLR pain-free. Due to the client’s increased pain response, full implementation of the SLR was delayed. A trial of jogging at 4.0 mph for 10 minutes and performing fundamental drills at basketball practice with the use of an elastic wrap to aid in AROM of hip flexion was initiated during the second week. The elastic wrap was applied in an X fashion, crossing over the left anterior hip joint, with the hip placed into mild flexion during the application. This application aided the client’s active hip flexion during functional activities.
During the third week of treatment the patient continued the use of pain-relieving modalities of ultrasound and premodulated electrical stimulation for 15 minutes with a hot pack to the proximal area. There was an addition of strengthening exercises including SLR in four directions (hip flexion, extension, abduction and adduction), and long arc quadriceps sets (LAQ). Each exercise was performed for 2 sets of 20 repetitions with a 2-3 pound weight added to the previous exercises. He was able to increase the repetitions, resistance and activity without post-exercise pain. After improving to this point, instruction to return to basketball practice at fifty percent, initiate sprinting activities, and continuation of the elastic wrap to aid in hip flexion was provided.

At the 4th week of treatment the patient reported a pain level of 2/10. Therefore, modalities to decrease overall pain were eliminated for the treatment sessions. The bilateral lower extremity stretching techniques were demonstrated by the patient including: supine hamstring and piriformis stretching, standing quadriceps and hip flexor stretch, standing gastrocnemius stretch, and standing iliotibial band (ITB) stretching. The patient demonstrated the bilateral lower extremity strengthening exercises including: SLR in four directions, LAQ, quadriceps sets and heel slides. Supine bridging (double and single leg), mini-squats, and lunges were added to the exercise program. The patient was able to return to previous activity levels pain free and was able to participate in basketball practice and games at 100%. The patient was instructed to discontinue wearing the elastic wrap during activity.
PIRIFORMIS STRETCH

* Lie on your back.
* Cross (left or right) ankle over opposite knee.
* Grab hold behind leg and pull up towards chest until you feel a comfortable stretch.
* Hold 20 seconds.
* Repeat 3 to 5 times.
* Perform ______ times a day.

HIP and KNEE - 37
Stretching
Quadriceps Stretch

Pull heel toward buttock until a stretch is felt in front of thigh.

Hold____ seconds.
Repeat____ times.
Do____ sessions per day.

Figure 2. Home exercise program (stretching)
1. Quad Set
   Slowly push your knee downward to straighten your leg, tightening the muscles on top of your thigh.

2. Heel Slide
   Slide your heel toward your buttock. Return to the starting position. For ease, you may use a bread board or table leaf under your surgical leg.

3. Hamstring Set
   With one knee slightly bent, pull your heel into the bed tightening the muscles on the back of the thigh.

4. Straight Leg Raise
   Bend your non-surgical leg. Straighten your surgical knee and lift it up 6-8 inches. Keep your knee as straight as possible.

5. Knee Straightening
   Place a coffee can or large rolled towel under your knee. Lift your foot off of the bed, straightening your leg.

6. Straight Leg Raise
   Bend your non-surgical leg. Straighten your surgical knee and lift it up 6-8 inches. Keep your knee as straight as possible.

Figure 3. Home exercise program (strengthening)
Figure 4. Home exercise advanced strengthening exercises
Patient education at discharge included handouts of exercises, instruction of when to return to physical therapy after discharge, when to return to play and instruction on differential diagnoses.

By the end of the physical therapy plan of care, the patient had participated in a total of 10 visits, 2-3 times per week for 4 weeks (15-30 minute sessions). At discharge the patient was cautioned to observe for increasing pain, edema and or loss of function and informed to contact the physician if they occurred. The patient's strength, AROM and functional activity level had improved since the initial evaluation and the patient was ready for discharge.

Outcomes at Discharge

Discharge status can be found with the following information of collected data in Table 2. The patient reported no tenderness over left AIIS area at discharge. Initial pain rated at 2/10 (rest) and 8/10 with AROM of left hip/knee was reduced to 1-2/10 with any activity after physical therapy intervention (see Table 2).

Table 2. Goniometric AROM measurements of the left hip before and after physical therapy intervention

<table>
<thead>
<tr>
<th>Motion</th>
<th>Left (1st visit)</th>
<th>Left (10th visit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>60</td>
<td>95</td>
</tr>
<tr>
<td>Extension</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Abduction</td>
<td>40</td>
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<tr>
<td>External Rotation</td>
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<td>40</td>
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<tr>
<td>Internal Rotation</td>
<td>30</td>
<td>30</td>
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</table>
Repeating the physical therapy special tests at discharge demonstrated the following: the FABER test, Thomas test and ASLR test were negative. Left hip and knee strength demonstrated resolution of all deficits when re-tested. This was an improvement of 1-2 muscle grades for the left iliopsoas, adductor and quadriceps muscle groups, respectively. Additionally, the patient had decreased pain with activity, increased left lower extremity AROM and was able to return to previous functional activity levels pain-free. The patient achieved the following goals:

1. Left hip AROM to within functional limits, left hip and knee strength to 5/5 and pain to 2/10 with activity, allowing the patient to ambulate without an antalgic gait and decrease risk of re-injury when returning-to-play.

2. Ascending/descending 10 steps, transfers pain-free, and the ability to walk/jog pain-free allowing return to previous activity level.

3. Ability to resume the previous activity level, including participation in high school sport activities pain-free.

Other tests that may be incorporated into a physical therapy examination may include clinometric tests. Clinometric tests are a methodological discipline concerned with quantitative methods of collecting and analyzing comparative data. It focuses on the development of methods to assess the quality of a measurement instrument, and the application of these assessment methods to the development and evaluation of instruments of measurements. Changes in the functional status of the patient could have been measured more appropriately with the use of a clinometric test. Clinometrics are easy to administer and cost effective. A clinometric was not performed at the time of
treatment but the Lower-Extremity Functional Scale could have provided additional information about the patient. The 20 item, region specific, self-report measure of the Lower Extremity Functional Scale was conceived to assess the functional status of patients with a spectrum of lower extremity problems.

Compliance is a huge issue when it comes to trusting a patient to continue their therapy at home when they are not in the physical therapy department. Compliance with his or her home instruction will impact the outcome in a positive manner and hopefully keep the patient from re-injuring themselves. There were no compliance issues involved with this patient. He attended all scheduled treatment sessions, was properly excused from “study hall” class, and was able to demonstrate the home exercise program independently without any cues after each session. This patient continued to show progress after the physician visit and adhered to physical therapy recommendations regarding incremental return-to-play. The risk reduction and prevention issue was provided by the physical therapist by monitoring his return-to-play, and returning strength and AROM to within functional limits. This was re-inforced by the fact that the patient had met his goals, was able to return to the previous practice level without restriction and would be monitored by his coach and school athletic trainer. This patient demonstrated improvement at each treatment session and had been following his restriction guidelines.

By the time of discharge from physical therapy services, the patient had returned to the pre-injury level of function and was educated on physical signs of possible differential diagnoses and when to return to the Physical Therapy office or to the physician. A home exercise program was instituted consisting of bridging (single and
double leg), LAQ, SLR in 4 directions, mini-squats, and lunges using 25 repetitions with a 5-10 second hold twice a day. The home stretching program incorporated supine hamstring/piriformis stretching, standing hip flexor stretch, and proper warm up activity prior to activity. The patient verbally agreed to this arrangement. The patient phoned the physical therapy office several weeks after his discharge visit to report his progress and adherence to the strengthening and flexibility exercises. The patient reported satisfaction with his physical therapy intervention without any incidence of re-injury.
CHAPTER III
Discussion/Reflection

This patient returned to functional activity after 2-3 weeks of physical therapy treatments, improving his ROM and strength of the involved left hip and knee. The patient’s compliance with limited activity and therapeutic exercise regimen allowed him to meet his goals early in the rehabilitation process. Midway through the treatment the patient did see an orthopedic physician due to the slow progression of decreasing pain. He was issued an anti-inflammatory medication, which did aid in the decrease of overall pain and an MRI was taken which ruled out any differential diagnoses. In looking back at this case study, I feel that I would have chosen the same orthopedic tests but would have included the Lower-Extremity Functional Scale to assess the current and previous functional status of the patient. As for the treatment portion, considering the modality options I had to work with in my facility at that time, I would have chosen the same modalities and progression of treatment. If I could go back and change things I might have been more aggressive with the strengthening exercises once the patient was pain free and included more proprioceptive exercises and adductor specific exercises. I do not think the same outcome would have occurred with less treatments and more modalities at home but the healing phase may have been accelerated by the patient seeing the orthopedic physician and beginning the anti-inflammatory medication earlier in the acute
stage to help decrease the inflammatory pain. Early during the rehabilitation treatment of this particular patient the coach and school athletic trainer were both contacted, with the athlete’s permission, and informed of the current situation. The coach was very accepting and compliant with the athlete’s restrictions, which made the process easier for the athlete to be more compliant. The athletic trainer was more than willing to assist but she was only available at the school one day per week to assess the needs of the athletes. The patient had made a positive recovery and after 12 months was contacted and reports no re-injury.
APPENDIX
Appendix A

Examination & Intervention Algorithm
**HIP PAIN ALGORITHM**
Julie Berry, DPT, ATC

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**Chronic**

1. Return to sport in 11 days
2. Return to sport in 2-6 weeks
3. Return to sport in 4-6 weeks or post-surgical treatment

**Conservative Treatment**

- **Stage 1:** Edema, pain, and tenderness. Gait training. Advance if maintaining normal gait pattern and full weight bearing.
- **Stage 2:** ROM/strength return to WFL. Limit atrophy. Advance if maintaining normal gait pattern and full weight bearing.
- **Stage 3:** Strength training. Advance if pt able to perform ADL’s without dysfunction and pain.
- **Stage 4:** Proprioceptive training, agility drills and sport specific activity. Advance if pt able to initiate sport specific drills pain free.

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**Traumatic**

- **Grade 1**
  - MVA Trauma
  - Refer to Physician

- **Grade 2**
  - Strain/ Tendonitis
  - Grade 1: Mild tear
  - Grade 2: Incomplete tear
  - Grade 3: Complete tear

- **Grade 3**
  - ? marked deformity
  - Fever
  - Marked loss of normal joint motion

**Acute**

- **Atraumatic**
  - Acceleration/ Deceleration Directional Change and Kicking
  - YES
  - Strain/ Tendonitis
  - Grade 1: Mild tear
  - Grade 2: Incomplete tear
  - Grade 3: Complete tear

**NO**

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**Differential Diagnosis**

- Sports hernia
- Avascular necrosis
- Labral tear

**Continued care from physician**
REFERENCES


