



Physician Alert

Case Report

41-year-old female with 6-month history of Achilles tendon pain

TESTIMONIAL

"I had become frustrated with the un-successful attempts to solve my heel pain. I had already done 1-month of physical therapy and had custom orthotics made, with no change in symptoms. The treatment that I received at Kinetic was completely different.

They were very concerned with how my entire body moved. The exercises that I was given were different from anything I had ever seen, but they worked. I could feel the difference within 2-weeks of treatment. I am glad my podiatrist had recommended I try physical therapy one more time. Since finishing my therapy I have been able to stand on my feet all day at work and I ran a 1/2 marathon without pain."

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ABSTRACT

KH is a 41-year-old female with a 6-month history of Achilles tendon pain. Her pain increased while standing at work, running for fitness, and walking longer distances. The pain affected her ability to perform work duties and she stopped her health club running program. She also described having R-knee pain develop over the last 6 months. Biomechanical assessment revealed foot, pelvic, trunk, and scapular asymmetries. These results indicated a need for 8 Postural Restoration exercise sessions and PRI custom foot orthotic. After completing 6 of the 8 recommended visits, the patient reported 90% improvement in symptoms and was able to return to fitness activity and work without increased symptoms. KH's experience confirmed that physical therapy at Kinetic is a very positive treatment alternative to help referring providers successfully treat patients suffering from unresolved pain.

(details of study on back)



History

KH is a 41-year-old female with a 6-month history of bilateral Achilles tendon pain (R-pain > L) that developed while training for a 1/2 marathon run and was progressively getting worse. The pain prevented her from being able to perform fitness activity and she was having pain with longer distance walking and throughout her work day. At time of initial visit, KH reported pain symptoms as 7/10 on VAS and was not able to run more than a mile without having to stop. KH also reported the development of R-knee pain while training. She had already undergone physical therapy with ultrasound and stretches for one month without improvement. Also, her custom foot orthotics have not made significant changes to symptoms and the podiatrist has referred her to Kinetic physical therapy to address postural, gait, and strength asymmetries detected.

Examination

Pelvic-femoral, trunk, scapular-thoracic, and foot objective measures:

	Right	Left
Hip Add (mod. Ober)	+	+
Hip Ext (mod. Thomas)	+	+
Hip ER (seated)	42°	45°
Hip IR (seated)	38°	35°
Trunk Rotation (supine)	Limited	Limited
Ankle DF	15°	18°

KH's pelvic position is consistent with a bilateral anteriorly tilted pelvis, with associated sacral and spinal orientation to the right. This asymmetrical pelvic-femoral position had altered expected normal ROM measurements throughout the entire body. Her hip ER and IR are limited due to the acetabulum rotation forward onto the femoral heads. The lumbar spine then needs to compensate into extension to return the spine to a functional up-right position, which is causing the facets to lock and prevents trunk rotation in both directions. Most specifically to this patient, the mechanics of acetabular-femoral (AF) and femoral-acetabular (FA) joint movement during the gait cycle are affecting all joints down to the distal ankle and great toe. This bilaterally tipped pelvis increases the tendency of body weight shifted onto the toes during gait, contributing to a toe walking pattern with limited heel strike, and subsequently hypertonic gas-trocnemius muscle overuse.

Initial evaluation uncovered limitations bilaterally in great toe extension and ankle DF, with some calcaneus instability (measured by excessive inversion). These findings warranted an immediate need for custom PRI orthotic molding. The custom foot orthotic designed by Foot Levelers (uses a pressure-plate system to map out the foot's pressure areas while standing) that KH had been using was not helping. An assessment of foot/ankle sub-talar neutrality in supported sitting vs. standing on the plane of the floor in an unsupported state will demonstrate a significant difference in the resting neutral position of the feet.

Intervention

• 8 Postural Restoration physical therapy sessions

Treatment initially focused on symptoms management and restoration of proper pelvic-femoral symmetry and mechanics. She was also recommended to purchase a more supportive shoe, in addition to her custom foot orthotic, for work and fitness (ASICS 2140: Stability) to help control the excessive calcaneus inversion measured. Iontophoresis with Dexamethasone was used to help treat inflammation and pain of Achilles tendon insertion and therapeutic exercises were used to retrain proper gait mechanics. Proper activation of the hamstrings muscle group was the initial target of the program due to its lengthened and weakened position from the bilateral anterior pelvic tilt. It was also very important to decrease compensatory muscle tone of paraspinals that had been in a shortened position from the excessive lordosis produced by the bilateral anterior pelvic tilt and strengthen abdominal obliques which had lengthened. Once KH was able to restore correct pelvic-femoral and thorax symmetry, she ultimately required improved strength and control of B-gluteus max. for hip extension to prevent compensatory muscle overuse of B-gastrocnemius and soleus for push-off with gait and functional activity to prevent Achilles tendon strain.

Outcomes

Over a 2-month period of the recommended 8-Postural Restoration therapy sessions the patient completed 6 with the following reports:

- Resolve of R-knee pain with all activity (VAS 0/10)
- Return to work and fitness training activity with 90% improvement in Achilles tendon pain (VAS 1-2/10 with increased activity)

Final objective measures as follows:

	Right	Left
Hip Add (mod. Ober)	-	-
Hip Ext (mod. Thomas)	-	-
Hip ER (seated)	50°	55°
Hip IR (seated)	45°	45°
Trunk Rotation (supine)	Full	Full
Ankle DF	20°	20°

Discussion

KH's objective findings of biomechanical asymmetry of the feet, pelvis, and rib cage position indicated a need to begin Kinetic Physical Therapy's specialized biomechanical Postural Restoration program. The patient was provided individualized home exercises based on her objective findings. The custom foot orthotic helped provide foot stability for optimal tri-planar mechanics during the gait cycle. By restoring proper biomechanics of the pelvis and femur, the tibia mechanics improved to decrease knee torque forces. In sum, the right knee pain was the result of torsion forces across the femoral-tibial joint as a direct result of the R-femur positioned in IR on the acetabulum and compensatory R-tibial ER to achieve a neutral R-LE with toes straight (patient's toes actually turned out initially during gait and stance). Correcting the pelvic-femoral asymmetry and increasing the strength of pelvic-femoral and trunk stabilizers bilaterally has improved her mid-stance position during gait and promoted push-off with hip extensor muscles (hamstrings and gluteus max.) during functional activity and fitness to decrease compensatory overuse pain of gastrocnemius/Achilles tendon.

It is significant to note KH's successful outcome with Postural Restoration. This example demonstrates the multi-factorial causation in a patient's pain pattern that is often related to areas other than the direct location that hurts. Her R-knee pain would not have likely resolved by simply addressing the right knee with traditional measures of muscle strengthening of the quadriceps. In addition, the Achilles tendon pain did not respond to ultrasound and stretching of her initial physical therapy. Success of the program required a total body restoration with knowledge of the biomechanical and muscle relationships that contribute to optimal functional movement.

This case report confirms that Kinetic Physical Therapy Institute in Woodbury, MN is a successful treatment alternative for patients with multiple overuse pain syndromes.

References

1. Hruska, R.J. Myokinematic Restoration - An integrated approach to the treatment of patterned lumbopelvic pathomechanics, Postural Restoration Institute, Lincoln, Nebraska, 2007.
2. Coffin, DPM, Paul D. "Its Not Posterior Tibial Dysfunction". Podiatry Management September 2006: 137-144.

