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## The effect of physiotherapy management and osteopathic manipulation on the patients with Achilles tendinitis injury: A case report

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### Abstract

In the sporting community, Achilles tendinopathy is a prevalent injury. This case study examines the rehabilitation of an Achilles tendinopathy in a volleyball player using osteopathic manual therapy (OMT) and a planned exercise programme. The patient has been experiencing right mid-portion ankle pain since breaking the ball. The main issue was that the patient's vertical jump performance was being hampered by pain. The patient complained of pain throughout the evenings and early mornings, as well as during the start of a training session before warming up and calling down. OMT and inventory therapy were used in tandem for the inventory therapy. A rehabilitation regimen was added to the manual therapy. The Achilles Tendon Rupture Score (ATRS) and visual analogue scales (VAS) were used to evaluate. The instance illustrated the significance of patient-centred care. It was critical that the patient's role on the volleyball court be thoroughly examined.

**Keywords:** ankle pain, physiotherapy, osteopathy, Achilles tendon

### Introduction

Achilles tendinopathy (also known as Achilles tendinitis) is a painful Achilles tendon overuse ailment. Athletes, particularly those who participate in sprinting and jumping sports, are prone to this injury. 43 percent of top track and field athletes reported having present or former symptoms of Achilles tendinopathy, with middle-distance runners having the highest prevalence (83 percent). In addition, two-thirds of the athletes in this study stated that tendon pain had a detrimental impact on their performance. Achilles tendinopathy, on the other hand, is not solely an athletic condition, as 65 percent of injuries diagnosed in a general practise environment are not related to sports. Despite advances in our knowledge of the injury, it remains a terrible, albeit slowly deteriorating, condition. Symptomatic athletes frequently continue to participate in sports, despite the fact that their performance is typically harmed and the ailment will worsen if ignored<sup>[1-5]</sup>.

When a patient complains of localised discomfort, swelling of the Achilles tendon, and loss of function, it is diagnosed as Achilles tendinopathy. According to the site of discomfort, insertional tendinopathy (20%–25%), mid-portion tendinopathy (55%), and proximal musculotendinous junction (9%) and proximal musculotendinous junction (9%) are the three types of Achilles tendon injuries. 8 Patients may experience symptoms at the insertion and mid-portion at the same time, and about 30% of patients experience bilateral pain<sup>[6-7]</sup>.

### Mechanism of injury

The Achilles tendon is mechano responsive, which means it adapts to the tissue's loading demands. Excessive loading combined with insufficient recovery time between training sessions is the most common cause of tendinopathy in athletes. An abrupt change or increase in training intensity or length was described by 60 percent to 80 percent of athletes who developed Achilles tendinopathy (i.e., training-load error). However, not all cases of high loading are due to sports; increases in job or daily activity might also contribute. Compressive stresses on the Achilles tendon and calcaneus caused by footwear or activities that position the

ankle in dorsiflexion (e.g., uphill running) or anatomical anomaly (e.g., Haglund deformity) may contribute to the development of pain at the insertion of the Achilles tendon [8-9].

### Anatomy

The Achilles tendon is the body's largest and most powerful tendon. The gastrocnemius muscle's distal femur tendinous fibres and the soleus muscle's proximal tibia tendinous fibres combine above the insertion on the posterior calcaneal tuberosity. The 15-cm-long Achilles tendon travels distally and twists internally at a 90-degree angle, allowing the gastrocnemius's anterior fibres to insert laterally and the soleus's posterior fibres to insert on the medial side of the Achilles tendon. Blood arteries entering the Achilles tendon are protected by the Kager's fat pad, which is placed anterior to the tendon. There is no tendon sheath on the Achilles tendon, but there is a highly vascularized that acts as a conduit for the tendon's vasculature and facilitates tendon gliding between the subcutaneous tissue and posterior fascia. The posterior tibial artery supplies the proximal and distal sections of the tendon, while the peroneal artery supplies the midsection (2 to 6 cm from the insertion point). Because the midsection has a low blood supply, it is especially prone to deterioration and rupture. [11].

### Case Report

A 19-year-old male professional volleyball player complained of right and ankle tendon pain that was worst at night and before warming up and cooling down. His activities of daily living were hampered by the pain, particularly walking up and down stairs, running, and rising from a chair. Most importantly, the pain hampered his ability to smash the ball on the volleyball court. He added mid-portion right Achilles pain at the time of inspection, and the patient also complained of medial ankle pain and knee pain, as well as overuse injuries in the ankle, which are prevalent in the sports community. On the visual analogue pain scale, both symptoms were rated as 5/10 (moderate pain 7) (VAS).

Due to discomfort and injury during a volleyball match, the patient was unable to complete his normal strength and conditioning routine. He was treated with manual therapy, prophylactic ankle bracing, active range of motion exercises, a modified strength plan, and electrical modalities for discomfort by the team physiotherapist. However, the patient's discomfort has not decreased. In addition, the patient self-reported generalised muscle discomfort as a result of decreased strength and conditioning, as well as extreme weariness.

### On Examination findings

The patient was not using any pain medications and had no previous medical history. 4 months earlier to this presentation of right mid-portion Achilles soreness, a right talocrural lateral inversion injury had occurred. Active range of motion (AROM), passive range of motion (PROM), and palpation of the Achilles tendon were all part of the initial evaluation. During the examination, I discovered that my patient had tendonitis in his contralateral Achilles. The tendon was palpated, then functional testing was performed, which included walking on toes and heels, the lunge test, squatting, and maximum vertical jump testing, all with patient feedback on pain levels. Testing for a painful arc sign, as well as osteopathy relations and PRM, were included to the osteopathic examination.

### Treatment

#### Osteopathy treatment

The patient and the practitioner agreed on the major treatment goal of being able to jump without pain as the main treatment aim. It was a set of treatments for treating ankle and foot joint constraints as well as muscle hypertonia caused by the initial trauma. The right Achilles tendon was treated with an indirect approach called counterstrain (CST) in the first stage of treatment. When the location is sore and low-intensity approaches are necessary, this technique can be beneficial. After that, the doctor holds the posture for 90 seconds before shifting the body part and assessing the sensitivity area again. Internal rotation of the right tibia and muscular hypertonicity in the right gastrocnemius muscle belly were treated using muscle energy technique (MET). A heel lift was prescribed for both the left and right sports shoes to help decompress the Achilles tendon and relieve strain in the lower leg musculature.

#### Follow up assessment

Weeks	VAS	The Achilles Tendon Rupture Score (ATRS)
1 <sup>st</sup> Week	5	40
2 <sup>nd</sup> Week	3	60
3 <sup>rd</sup> Week	1	90

### Discussion

#### Physiotherapy and rehabilitation

The rehabilitation approach mentioned in this report was tailored to this patient's needs in order to return him to volleyball. To assist single leg jump and set the ball, the rehabilitation regimen includes single leg workouts and weight training. In training drills, the patient was likely to set at least 4 balls every minute in rapid succession over the course of an hour, resulting in 250 additional leaps.

Then calf raises in a weighted calf raise and calf raises in a leg press machine are just as effective as a standard eccentric loading programme (ELP) of 3 sets of 12 unilateral eccentric heel lifts per day for 12 weeks.

#### Osteopathy Treatment

The patient also got four osteopathic manual therapy (OMT) treatments, including articulation, high velocity low amplitude manipulation (HVLA), counterstrain technique (CST), and soft tissue stretching, mostly to the ankle joint. To increase joint range of motion, HVLA was used. CST was chosen because it is low-intensity and has the potential to treat individuals with their problems. CST has been shown to diminish the amplitude of the stretch reflex in the calf muscles. As a result, it was anticipated that CST applied to the calf would help treat the symptoms by reducing muscular tension, allowing for low-pressure drainage and more "normal" muscular action, along with tibia bone listening.

### Discussion

The patient in this case report improved his soleus lunge test with time, which was complemented by dorsiflexion. OMT was a valuable addition to his rehabilitation programme because it increased range of motion and decreased surrounding muscle hypertonicity, resulting in beneficial changes in the biomechanics of the affected joints. The relevance of incorporating the patient's goals into the rehabilitation regimen is highlighted in this situation. Throughout the treatment, a succession of tiny goals were established. Despite not being able to train at a pre-injury

level, these provided milestones for improvement and kept morale up. Surprisingly, there is currently inadequate evidence to show that patients who continue pain-monitored Achilles tendon loading activities will have negative effects or worsen treatment outcomes.

The findings of this case report highlight the importance of large-scale randomized-controlled trials that look at a wide range of patient types, including athletes and non-athletes, in order to determine the most appropriate loading doses and determine whether the individual's tendinopathy is reactive or degenerative. Athletes' performance is negatively impacted by chronic Achilles tendon injury. Additional evidence that helps to further specialize or focus a rehabilitation programme would allow doctors to prescribe and support patients through highly tailored programmes, potentially improving patient outcomes.

## Conclusion

The goal of this case study is to show how an osteopathy treatment approach (OMT) combined with an exercise and rehabilitation programme can be used as a typical treatment model in osteopathic practice. OMT can be used to manage physical findings that may impede or impair a patient's everyday activities, as well as to support and enhance a programme targeted at recovering function and fostering independence from therapy in a range of clinical scenarios.

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