

EFFECTIVENESS OF ALFREDSON PROTOCOL WITH MFR FOR ACHILLES TENDINOPATHY IN ATHLETES

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ABSTRACT

BACKGROUND: Achilles tendinopathy is a clinical condition among the athletes and also found in the people who are non-athletes. This condition is caused by increased presence of glycosaminoglycans, fibroblasts, vascular hyperplasia, increased amounts of proteoglycans disorganized collagen, absence of inflammatory cells and prostaglandin.

AIM: To study the effectiveness of Alfredson protocol with MFR for Achilles tendinopathy in athletes.

OBJECTIVES:

To study the effect of Alfredson protocol with MFR on improving function of ankle joint

To study the effect of Alfredson protocol with MFR on pain

METHODOLOGY: Forty- five subjects who fulfilled selection criteria included using inclusion criteria. Subjects were divided into Group A who received Alfredson protocol and Group B who received Alfredson exercise programme with MFR. Group A had 22 subjects and Group B had 23 subjects. Subjects were evaluated for Achilles tendinopathy using VISA-A Scale. Subjects were given eccentric exercises with MFR for 12 weeks. After intervention of 12weeks outcomes measures were given again and it showed difference in their VISA-A Scale, which indicated that Alfredson exercise programme with MFR showed early results and pain relief in patients than of just Alfredson exercise programme.

RESULT: The results indicated that there is significant reduction in pain and improves function after the given treatment protocol. Also, there is increase in the VISA -A score due to the treatment.

CONCLUSION: The findings of this study support the effectiveness of Alfredson Protocol with MFR for Achilles Tendinopathy in Athletes

CLINICAL IMPLICATION: Given the promising results of Alfredson Protocol with MFR, it can be beneficial for clinicians to incorporate this technique into treatment of Achilles Tendinopathy in Athletes for a better recovery

Keyword: Achilles tendinopathy, MFR, Alfredson Protocol

INTRODUCTION

A common musculoskeletal illness that affects those who participate in sports or physical activities that require repetitive loading of the Achilles tendon is Achilles tendinopathy.⁷ Achilles tendinopathy is a clinical condition characterized by pain and swelling in and around the tendon, mainly arising from overuse. Affects both non-athletes and athletes.² The disease is distinguished by a heightened fibroblast count, vascular hyperplasia, elevated proteoglycan and glycosaminoglycan concentrations, disordered collagen, and a lack of inflammatory cells and prostaglandin. The ideal term for diagnosis is Achilles tendinosis, which describes disease of the Achilles tendon. However, the word Achilles tendinopathy, which is best for clinical diagnosis, describes sore overuse tendon without implying disease.⁷

According to its anatomical position, Achilles tendinopathy can be divided into two primary categories: insertional tendinopathy, which occurs at the calcaneus-Achilles tendon junction, and non-insertional tendinopathy, which occurs 2 to 6 cm proximal to the Achilles tendon's insertion into the calcaneus.⁸ One of the most common overuse injuries to the ankle and foot is Achilles tendinopathy. Up to 5% of elite athletes may terminate their careers due to it, and 9% of leisure runners may be impacted. Achilles tendinopathy was discovered in 5.6% of participants in an epidemiologic study involving 1394 non-athletes (4% insertional, 3.6% noninsertional, and 1.9% both types).⁸ Conservative treatment for Achilles tendinopathy is NSAIDs, cryotherapy, shock wave therapy and eccentric exercises.¹

One of the most common physiotherapy treatments for Achilles tendinopathy is an exercise programme. One consisting of eccentric exercises has shown good clinical results in patellar and Achilles tendinopathy. On the other hand, eccentric and static stretching exercises appear to be an effective treatment for tendinopathies.¹ An exercise programme consisting of eccentric exercises in the management of Achilles tendinopathy was first proposed by Alfredson. The participants in the eccentric exercises group perform a 12-week eccentric exercise program based on the Alfredson method for their leg muscles.⁹ The program consists of two exercises: one that is performed with the knee flexed to work the soleus and the other with the knee extended to work the gastrocnemius. To produce functional improvement, the affected limb must undergo three sets of 15 repetitions of each exercise without a rest period. One of the most common overuse injuries to the ankle and foot is Achilles tendinopathy. Individuals who engage in strenuous activities like running and jumping are more prone to have this condition.⁸ Myofascial Release (MFR) has emerged as a complementary intervention. MFR targets fascial adhesions and muscle tightness within the gastrocnemius-soleus complex and

surrounding tissues, thereby improving flexibility, circulation, and neuromuscular function. When integrated with the Alfredson protocol, MFR may enhance the overall therapeutic effect by addressing both tendon pathology and myofascial restrictions. Preliminary studies suggest that combining MFR with eccentric loading leads to superior improvements in pain reduction, ankle dorsiflexion range of motion, and functional outcomes compared to exercise alone.

NEED FOR STUDY

Previous studies shows that there is high prevalence of Achilles tendinopathy in India. It also shows, Achilles tendinopathy is quite common in Athletes. Studies have revealed that Alfredson protocol can help in reducing pain and improving functions in Achilles tendinopathy. But there are very less / no studies done to find the effect of Alfredson protocol with MFR in treatment of AT in Athletes.

METHODOLOGY

- Type of study: A Comparative study
- Type of sampling: Athletes
- Study design: Pre and post experimental study
- Sample size: 45
- Study duration: 6 months

MATERIALS

- Pen, Paper (Data collection form/Assessment form)
- Data collection sheet
- Consent form
- Universal goniometer
- Powder/ moisturiser
- Napkin & Foam roller

INCLUSION AND EXCLUSION CRITERIA

INCLUSION CRITERIA

- Both males and females are included.
- Subject giving their consent to participate.
- tenderness with palpation 2-6 cm above the Achilles tendon insertion on the calcaneus (midportion Achilles tendinopathy)
- minimum duration of symptoms three month
- no history of trauma to the Achilles tendon
- Unsuccessful conservative treatment before entering the study, but not in the preceding one month
- No other conditions that could significantly contribute to posterior ankle pain (osteoarthritis, inflammatory arthritis, radiculopathy, systemic neurological conditions, etc).
- No congenital or acquired deformities of the knee and ankle
- Furthermore, two of the below four tests had to be positive:
 1. Positive heel-raise test (also known as calf-raise or toe raise test)
 2. Negative Thompson's (Simmonds') test
 3. Positive painful arc sign
 4. Positive compression test

EXCLUSION CRITERIA

- peritendinous injections with local anesthetics or corticosteroids and physiotherapy within the last four to six weeks before the study.
- bilateral AT of more than six weeks, a neurological or muscle disease.
- peripheral vascular or systemic inflammatory disease.
- presence of knee and ankle deformities, previous ankle or Achilles surgery, previous Achilles tendon rupture.
- previous ankle dislocation or fracture.

OUTCOME MEASURE

VISA-A Questionnaire

PROCEDURE

- 1- Ethical clearance
- 2- Screening of subjects as per criteria
- 3- Explanation of intervention in understanding local language
- 4- Written consent form taken
- 5- Pre-interventional assessment
- 6- Application of treatment 5 times/week for 12 consecutive weeks
- 7- Post-intervention assessment
- 8- Result

ALFREDSON PROTOCOL

The Alfredson protocol is an exercise program which helps to handle forces and stress better called eccentric loading. In this programme the patients were instructed to do their eccentric exercises at a slow speed twice daily, 5 days/week, for 12 weeks. Two types of eccentric exercises were used. The calf muscle was eccentrically loaded both with the knee straight and, to maximize the activation of the soleus muscle, also with the knee bent. Each of the two exercises included 15 repetitions done in three sets. Between each set there was a 2-min rest.

MYOFACIAL RELEASE

This technique is applied before Alfredson protocol 2-3 times/week, for 12 weeks, Duration – 15-20 minutes per session focused on calf Achilles complex

STATISTICAL ANALYSIS

Normality test using Shapiro-Wilk

Variable	Time Frame	Group A		Group B	
		z-value	p-value	z-value	p-value
VISA	Pre	0.963	0.553	0.908	0.053
	Post	0.935	0.153	0.931	0.117

TABLE 1

Statistical analysis for the present study was done using statistical package of social sciences (SPSS) version 23 so as to verify the results obtained.

Normality of pre and post scores in group A and group B was done by using Shapiro-Wilk test as the sample size is less than 2000. The pre-test and post-test scores of both variables in Group A and Group B follow normal distribution as the p-value is greater 0.05. Therefore, the parametric tests were applied.

Comparison of the pre intervention and post intervention outcome measures within the group and between the groups was performed using paired sample t test and independent samples t test is used respectively.

Probability values <0.05 were considered minimal statistically significant and values < 0.01 and 0.001 were considered highly significant and very highly significant respectively

		Group		Total
		Grp-A	Grp-B	
Gender	Female	8	7	15
	Male	14	16	30
Total		22	23	45

TABLE 2

Comparison of Group A and Group B with pre-test and post-test scores of VISA by independent samples t test

Time	Grp-A		Grp-B		t-value	p-value
	Mean	SD	Mean	SD		
Pre	13.23	3.52	12.87	3.15	0.360	0.721
Post	53.41	3.84	75.61	4.99	16.677	0.001

TABLE 3

DISCUSSION

The purpose of this study aimed to evaluate and compare the effectiveness of Alfredson protocol with and without MFR on athletes. Pre & Post treatment outcome were analysed and statistically it revealed that both the interventions were effective in reducing pain and improving mobility of ankle. However, participants who received the Alfredson protocol in combination with MFR demonstrated greater improvement compared to those who followed the Alfredson protocol alone. A significant difference was observed between the two groups, indicating that the addition of MFR enhanced the reduction of calf muscle pain and improved the ankle mobility more effectively.

The participants following the Alfredson Protocol combined with MFR exhibited greater reduction in pain and improvement in functional performance compared to those who performed the Alfredson exercise programme alone. The superior outcome can be attributed to the eccentric training of both gastrocnemius and soleus muscles with increased sets and repetitions in the combined

protocol. The enhanced performance observed in Group B can be explained by synergistic effect of MFR, which provided additional support and facilitated muscle activation during eccentric exercises. Consequently, the Alfredson protocol with MFR was more effective than the Alfredson protocol alone in improving calf muscle strength and ankle mobility. [2]

According to the current study, the most effective treatment for chronic midportion AT is eccentric exercise, with success rates ranging from 49 to 90%. Additionally, eccentric activities alter the thickness and stiffness of tendons structurally. [1]

Together, these mechanisms contribute to functional recovery and improved clinical outcomes, highlighting the effectiveness of this combined approach in the rehabilitation of mid-portion Achilles tendinopathy.

CONCLUSION

The finding of this study supports the effectiveness of Alfredson Protocol with MFR for Achilles Tendinopathy in Athletes.

LIMITATION & SUGGESTION

Number of subjects can be increased.

Study can be done in other number of populations in which Achilles tendinopathy is commonly found.

Number of subjects were limited.

Subjects having other medical conditions were excluded.

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