



Comparison of Achilles Tendinopathy among Regular and Irregular Prayer Performers in Lahore and Sheikhpura: A Cross-Sectional Study

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A B S T R A C T

Background: Achilles tendinopathy (AT) is a common overuse condition characterized by pain and functional limitation during weight-bearing activities. Repetitive movements involved in daily prayer may influence tendon health.

Objective: To determine the comparison of Achilles Tendinopathy in Regular and Irregular prayer offers of Lahore and Sheikhpura.

Methodology: The cross-sectional survey employed non-probability convenient sampling, enrolling 384 male participants age between 25-55 years with Achilles tendinopathy. Tendinopathy was assessed using the VISA-A questionnaire. The sample population to 384 people who were divided into two groups which were regular and irregular prayer offers from different mosques of Lahore and Sheikhpura. Data analysis is done by using the IBM SPSS Statistics 25.

Results: Among 384 participants, 192 were regular and 192 were irregular prayer performers. Regular performers demonstrated higher VISA-A scores, indicating better tendon function. Asymptomatic AT was reported in 79.7% of regular performers compared to 40.1% of irregular performers. Symptomatic AT was more prevalent among irregular performers (59.9%) compared to regular performers (20.3%). A statistically significant association was found between prayer frequency and AT status ($p = 0.039$).

Conclusion: A significant association exists between prayer frequency and Achilles tendinopathy status. Regular prayer performers showed better tendon-related outcomes compared to irregular performers. However, causal relationships cannot be established due to the cross-sectional design.

Keywords: Achilles Tendinopathy, Prayer, VISA-A, Physical Activity, Musculoskeletal Health

Introduction

The Achilles tendon is the strongest tendon in the human body and is frequently affected by overuse injuries. Achilles tendinopathy (AT) is characterized by pain, reduced function, and structural changes within the tendon.^{1,2} Achilles tendinopathy is a condition characterized by abnormally high stress levels in the Achilles tendon, resulting in inflammation, degeneration, or a combination of both. This condition can be caused by metabolic, sex, hereditary, and abusive stressors, inadequate vascularity, and flexibility needs.³ Achilles tendinopathy (AT) is an inflammatory condition causing tendon deterioration, with an incidence of 1.85/1000

individuals. Adult AT is most common in athletes or strenuous activities involving prolonged standing or dysfunction.⁴

Patients express acute foot discomfort and trouble walking. Tenderness and swelling can be seen along the Achille's tendon's course and at its calcaneal insertion on clinical examination.⁵

Cold temperatures can cause tension in the body and increase mortality rates. Outdoor exercise can reduce the temperature of the Achilles paratenon, increasing friction and the risk of Achilles tendinopathy. The general population frequently experiences heel discomfort, which has a significant negative impact on quality of life.⁶ Warming up

before training is essential to control Achilles tendinopathy. Older adults walk slowly and with reduced metabolic power, contributing to a gradual walking gait and improved power consumption.⁷⁻⁹ Sports cause 75% tendon damage, leading to surgical procedures like V-Y shortening, sural tendon raises, plantar tendon, peroneus brevis tendon, fascia strip, and intestinal tract tendon flap.¹⁰

Salat, a Muslim invocation, involves postures and motions for spiritual reflection and Quran recitation. Muslims perform salat at least five times daily, with specific rakaa for each prayer. LL-BFR exercises are crucial for examining tendon adaptations.^{11, 12}

A 2021 study by S. Anton J., et al. found psychological deficits in patients with patellar or Achilles tendinopathy during recovery. These deficits were linked to rigidity, process, participation, and dignity. The study suggests physical therapists should recognize individuals with a lack of psychological readiness for sports and kinesiphobia or catastrophizing ideas.¹³

Mallows, Adrian, et al.'s 2022 study on patients' opinions on exercise-based Achilles tendinopathy correction found that patients appreciate a reasonable system that acknowledges the biopsychosocial influence of AT.¹⁴

Silva et al.'s 2022 conducted an assessment on Are static foot posture and ankle dorsiflexion range of motion associated with Achilles tendinopathy? study found that less ankle dorsiflexion range of motion is linked to more sign rigidity in individuals with Achilles tendinopathy.¹⁵

Imamoğlu O worked on Benefits of prayer as a physical activity. According to study findings Namaz balances body's biochemical processes, providing health and fitness benefits. It boosts brain blood flow, improves memory, enhances focus, and prevents indigestion. Muslims should reduce morning rakat to avoid indigestion, while regular exercise aids weight loss and brain function.¹⁶

The study aimed to determine how Muslim prayer movements affected the lower limb, particularly the Achilles tendon. The muscles flexibility is different in regular and irregular prayer offers. This study explores the effect of Salat on Achilles tendon. There is limited research on the occurrence of Achilles tendinopathy among prayer offers. The prior research did not place as much attention on this. This study is intended to observe these factors and comparison of Achilles Tendinopathy in regular and irregular prayer offers. We are sure to get prevention and interventions that in the future give a less occurrence of Achilles tendon in the community in the future.

Methodology

In this research, cross-sectional survey design and non-probability convenient sampling method were used. There were 384 male participants with age ranging from 25-55 with clinical manifestations of Achilles tendinopathy.^{17,18} A total of six months of data collection, i.e. January 2023 to July 2023, was conducted in different masjids in Lahore and Sheikhpura after receiving the permission of the Ethical Review Committee (HU-ECRB-DPT-2023-34). The participants were contacted in selected mosques either after or before prayers. Screening of eligible individuals after briefing regarding the purpose of the study was done based on the inclusion and exclusion criteria. All the participants were divided into two groups; regular and irregular prayer offers. The specified inclusion criteria encompass the Achilles tendon which may experience pain or discomfort when individuals engage in weight-bearing plantar flexion actions, such as running or leaping.¹⁹ Participants with a history of total Achilles tendon rupture, other therapies, exercise limitations, or pain from insertional tendinopathy or bursitis were excluded.¹⁸

Achilles tendinopathy severity was measured by using the Victorian Institute of Sports Assessment-Achilles (VISA-A) questionnaire. This instrument is a standardized measure of pain, functional life and sporting activity on a numeric scale. It is composed of 8 items, and the scoring is between 0 and 100, wherein the lower the score the worse the symptoms and functional limitation. The questionnaire is an internationally validated instrument and is commonly applied both clinically and in research to measure Achilles tendon pathology. The data was coded and analyzed with version 25 of the IBM SPSS statistics. The demographic variables and VISA-A scores were defined and computed using descriptive statistics (mean, standard deviation and frequency distributions). Symptomatic and asymptomatic Achilles tendinopathy was compared between frequent and irregular prayer offers.

The Pearson chi-square test was used as a part of inferential statistics to test the associations between the status of Achilles tendinopathy and the frequency of prayers. P-value below 0.05 was regarded to be statistically significant.

Results

Descriptive statistics were calculated for 384 individuals, 192 each group (regular prayer offers and irregular prayer offers) respectively. A cross-sectional survey was done to find comparison of Achilles Tendinopathy among Regular and Irregular Prayer Performers in Lahore and Sheikhupura: A Cross-Sectional Study

The descriptive statistics of the VISA questionnaire variables among respondents with regular and irregular prayer practices. Overall, the two groups showed noticeable differences across several VISA domains, with higher scores for most VISA components observed among regular prayer offers, whereas some components, particularly VISA 6, VISA 8C, and the Achilles tendinopathy total score, showed a different pattern. The findings indicate variation in the clinical characteristics of Achilles tendinopathy between the two groups and provide a basis for further comparative statistical analysis. (Table 1)

Table 1: Descriptive statistic of variables of VISA questionnaire in Regular and Irregular prayer offers

Characteristics	Regular prayer offers Mean $\pm$ St. Deviation	Irregular prayer offers Mean $\pm$ St. Deviation
Age of respondents	39.09 $\pm$ 8.94	38.36 $\pm$ 8.18
VISA 1	9.43 $\pm$ 1.60	2.24 $\pm$ 2.49
VISA 2	8.85 $\pm$ 2.11	2.97 $\pm$ 2.46
VISA 3	9.77 $\pm$ 1.06	2.40 $\pm$ 2.50
VISA 4	9.66 $\pm$ 1.26	3.13 $\pm$ 2.43
VISA 5	9.53 $\pm$ 1.46	1.82 $\pm$ 2.41
VISA 6	2.55 $\pm$ 2.51	0.31 $\pm$ 1.21
VISA 7	0.54 $\pm$ 1.96	0.31 $\pm$ 1.08
VISA 8A	23.79 $\pm$ 6.53	0.00 $\pm$ 0.00
VISA 8B	9.42 $\pm$ 5.26	5.27 $\pm$ 2.50
VISA 8C	0.00 $\pm$ 0.00	4.15 $\pm$ 2.06
Total Score: Achilles Tendinopathy	1.20 $\pm$ 0.40	1.60 $\pm$ 0.49

The VISA-A questionnaire was administered to all participants to assess the tendinopathy. In regular prayer offers there were 11.5% (n=22) participants who had stiffness for 50 minutes in the Achilles region when they first got up, 88.5% (n=170) participants had stiffness for 0 minutes in the Achilles region when they first got up. And in Irregular prayer offers there were 55.2% (n=106) participants who had stiffness for 100 minutes in the Achilles tendon when they first got up, 44.8% (n=86) participants reported stiffness for 50 minutes in the Achilles tendon when they first got up. Additionally, in Regular prayer offers there were 79.7% (n=153) participants who had Asymptomatic AT, 20.3%

(n=39) participants had Symptomatic AT and In Irregular prayer offers there were 40.1% (n=77) participants who had Asymptomatic AT while 59.9% (n=115) participants had Symptomatic AT. (Table 2)

Table 2: Symptomatic and Asymptomatic AT in Regular vs Irregular Prayer Offers

Regular Prayer Offers	Frequency		%age
	Asymptomatic AT	153	79.7
Irregular Prayer Offers	Symptomatic AT	39	20.3
	Total	192	100.0
Irregular Prayer Offers	Asymptomatic AT	77	40.1
	Symptomatic AT	115	59.9
Irregular Prayer Offers	Total	192	100.0

AT=Achilles Tendinopathy, %age=percentage, vs=versus

Pearson chi-square showed significant (P=0.039) association of Achilles Tendinopathy between Regular prayer offers and irregular prayer offers. (Table 3)

Table 3: Chi Square test between Regular prayer offers and irregular prayer offers

	Value	Df	Asymptotic significant (2 sided)
Pearson chi-square	384	1	0.039

Discussion

This cross-sectional study, conducted at different Masjids of Lahore and Sheikhupura, aimed to determine the comparison of Achilles Tendinopathy among Regular and Irregular Prayer Performers in Lahore and Sheikhupura: A Cross-Sectional Study.

This finding resonates with the work of Jalal AH. 2021, which emphasized the morphological, neuromuscular and cardiovascular disease risk profiles among asymptomatic sedentary males performing Salaah (Islamic prayer). Jalal AH. Examined that CVD risk and prevention among male Salaah participants, finding that older individuals are becoming more aware of CVD dangers. It also suggests Salaah movements, particularly low-intensity aerobic exercise, can provide physiological benefits.²⁰

Another study of Chukwuemeka et al. 2022, In which they worked on Prevalence and Risk factors of Achilles Tendinopathy among soccer players. Islam encourages combative activity to strengthen the body and cooperation, while non-confrontational movement enhances fighting alone. Sports can improve muscle strength, bone protection, and

organ function. They can revive the body and mind through a fusion of inside and outside. Physiology and mind must be in harmony, and Kowtow can prevent Achilles tendon rupture, improve flexibility, and support the entire body. Chinese Muslims are less aware of Achilles tendon ruptures than non-Muslims. Health preservation and fitness can be achieved by coordinating mind, bones, and muscles.¹

A study by İmamoğlu O.2021, conducted almost a similar investigation on Benefits of prayer as a physical activity. This study explored the Namaz balances body's biochemical processes, providing health and fitness benefits. It boosts brain blood flow, improves memory, enhances focus, and prevents indigestion. Muslims should reduce morning rakat to avoid indigestion, while regular exercise aids weight loss and brain function.¹⁶

Another study by Smith MD, et al. 2022, investigated symptoms characteristics in office workers using standing workstations. The study explores patients' opinions on exercise-based treatment for Achilles tendinopathy, revealing that the senses offer a platform for experimenters and doctors to observe distance and patients appreciate a reasonable system that acknowledges the biopsychosocial influence of AT.²¹

To contextualize and validate the study's findings, it is crucial to compare them with relevant previous articles. Many studies have explored the occurrence of Achilles Tendinopathy in people.

Current study showed Impact of prayer on regular prayer offers and irregular prayer offers. Pearson chi-square showed significant ($P=0.039$) association between Regular prayer offers and irregular prayer offers. Study showed in Regular prayer offers there are 79.7% ($n=153$) participants have Asymptomatic AT, 20.3% ($n=39$) participants have Symptomatic AT and In Irregular prayer offers there are 40.1% ($n=77$) participants have Asymptomatic AT, 59.9% ($n=115$) participants have Symptomatic AT..

Recommendations: Since everyone experiences pain differently, pain cannot be reliably recorded. Future research on this topic is recommended to involve various population numbers and geographical locations. Research comparing different ages ought to be conducted. Future research should also include a control group.

Conclusion

This study concluded that prayer have positive impact on Achilles tendon among Regular and Irregular prayer offers. Pearson chi-square showed significant association between regular prayer offers and irregular prayer offers. Prayer improves the Achilles tendon activity in regular prayer offers.

Conflict of Interest: None

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Data Availability Statement: The datasets generated and/or analysed during the current study are not publicly available due to ethical, legal, and participant confidentiality considerations but may be available from the corresponding author upon reasonable request, subject to institutional approval where applicable.

Disclaimer: This Article was part of thesis. We as authors also want to declare that we used AI-assistant tools in this article for improving language. We authors are fully responsible for the accuracy, originality, integrity, and scientific validity of this article.

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Author's contribution: ¹⁻⁴ Substantial contributions to the conception or design of the work for the acquisition, analysis or interpretation of data for the work. ⁴⁻⁶ Drafting the work or reviewing it critically for important intellectual content, ¹⁻⁶Final approval of the version to be published, agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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