Volume 4, Issue 4, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

AWARENESS OF IMPLEMENTATION OF THE ALFREDSON ECCENTRIC EXERCISE PROTOCOL IN THE MANAGEMENT OF ACHILLES TENDINOPATHY

Saba Mengal[1], Rabia Intikhab[2], Soofia Ishfaque[3], Saneela Ishfaque[4], Tooba Tausif[5], Tabish Husain Siddiqui[6], Aiasha Zafar[7], Sadia Saleem[8] ,Komal Jamil[*9]

[1]*Isra University, Hyderabad, Pakistan*
[2]*Hamdard University, Karachi, Pakistan*
[3]*Sohail University, Karachi, Pakistan*
[4]*Ziauddin University, Karachi, Pakistan*
[5]*PNS Shifa Hospital, Karachi, Pakistan*
[6]*Hamdard University, Karachi, Pakistan*
[7]*Prime Human Services, Karachi, Pakistan*
[8]*Liaquat Institute of Medical and Health Sciences, Karachi, Pakistan*
[*9]*Bahria University Health Sciences Campus, Karachi, Pakistan*

[1]saba_noor3689@yahoo.com, [2]rabia.intikhab@gmail.com, [3]soofiaishfaque@gmail.com, [4]saneelaishfaque@gmail.com, [5]tooba.tausif09@gmail.com, [6]sidiquitabish1@gmail.com, [7]aiashazafar@gmail.com, [8]sadiasaleem6604@gmail.com, [*9]komalansari4@gmail.com

DOI: https://doi.org/10.5281/zenodo.19729453

Keywords
Incidence, Achilles Tendonopathy, Tendinitis, Point Prevalence, and Tendo Calcaneus.

Article History
Received: 25 February 2026
Accepted: 05 April 2026
Published: 24 April 2026

Corresponding Author: *
Komal Jamil

Abstract

Background

The incidence of Achilles tendinopathy in the general public is about six percent, twenty-four percent in athletes, and thirty-six percent in short-distance runners, and around fifty-two percent in long-distance runners. The ratio of ankle injuries is high in players who play basketball, tennis, and soccer. Around twenty-seven percent of musculoskeletal injuries are common in athletes.

Objective

To evaluate the awareness of implementation of the Alfredson eccentric exercise protocol in the management of Achilles tendinopathy

Methodology

The cross-sectional study was done through an online survey among the Physical Therapists of Pakistan. The estimated sample size calculated from the Raosoft.com software was 449 participants. The sampling technique used in this study was convenient. The data was collected through a questionnaire used in a previous study, and an assessment tool named: NRS ranging from 0 to 10. Statistical analysis was done through SPSS version 23.

Result

Out of 449 research participants between the ages of 22 and more than 50 years were evaluated through a validated questionnaire and assessment tool. The majority of physical therapists were working in OPD, i.e., 356 (79.28%). Therapists with more than 5 years of experience have 221 (49.22%) awareness regarding alfredson protocol. They observed that patients rated on a moderate level

Volume 4, Issue 4, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

of the numeric rating scale, around 156 (34.74%), and the excellent level of satisfaction was found among 143 (31.84%) from the Alfredson protocol.

Conclusion

Our study concluded that the awareness and implementation of alfredson protocol was mostly found in physical therapists having more than five years of working experirnce.

INTRODUCTION

The term Achilles tendinopathy is the most common and major overuse injury, which causes thickening, stiffness, degeneration, and swelling of the tendon of Achilles, which connects the gastrocnemius muscle to the heel bone.[1] The incidence of Achilles tendinopathy in the general public is about six percent, twenty-four percent in athletes, and thirty-six percent in short-distance runners, and around fifty-two percent in long-distance runners.[2] Physical therapists face many complications in the heel bone due to prolonged standing in a constant position while performing daily high-intensity work. [3] The chances of Achilles tendinopathy increase in those people who perform their work in a bad posture, and the body load is shifted to the lower limb, which alters the range of motion of the ankle. During running activity, the most common tendon affected is the Achilles tendon; if it is not treated promptly, it affects the quality of life of an individual.[4] The ratio of ankle injuries is high in players who were playing basketball, tennis, and soccer. Around twenty-seven percent of musculoskeletal injuries are common in athletes.[5]

The management of Achilles tendinopathy includes electrotherapy, ice therapy, hydrotherapy, kinesiotherapy, applying splints, dry needling, and performing exercises. In exercises program includes concentric, eccentric, isometric, and isokinetic exercises.[6] It depends on the physical therapists on what plan they follow according to the patient's condition. Only exercises or choose multiple options with exercises.[7] The rehabilitation of an athlete with Achilles tendinopathy can be divided into four phases: (1) symptom management and load reduction, (2) recovery, (3) rebuilding, and (4) return to sport. Exercises can be performed to enhance tendon healing and immediately reduce the symptoms which affects on the quality of life of an individual.[8] Complete rest from all activities during the early phases of treatment may not be necessary if rest is adjusted based on the symptoms.[9]

The Alfredson protocol is also a treatment for Achilles tendinopathy that involves heel drop exercises to strengthen the tendon of the heel through "eccentric" movement. In 1998, Alfredson's protocol was developed, which consists of 3 sets of 15 reps done in 2 times a day, for a whole week, and followed by the exercises for 12 weeks. During these exercises, the gastrocnemius and soleus muscles in the calf are active and under tension.[10] Performing eccentric exercises plays an important role in managing Achilles tendinopathy.[11] In eccentric exercise, the muscle contracts while being lengthened. Eccentric contractions not only produce the highest forces in the muscle compared to concentric or isometric contractions, but they are also energy efficient.[12] The most frequently described protocol focuses on progressive eccentric strengthening with increasingly heavier loads.[13] Eccentric exercises can reduce pain and improve the quality of life of a patient. In this exercise, the heel is slowly lowered off a step while the toes stay on the edge, applying controlled stress to the Achilles tendon to promote healing and reduce the pain and stiffness.[14] The Alfredson protocol is widely regarded as the gold standard for treating Achilles tendiopathy. An individual should feel mild to moderate pain during the exercises, which indicates the tendon is strengthening. If the exercises feel too easy, adding resistance like weights or bands can help.[15] The study aims to evaluate the awareness of implementation of the Alfredson

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

eccentric exercise protocol in the management of Achilles tendinopathy.

METHODOLOGY

The cross-sectional study was done through an online survey among the Physical Therapists of Pakistan. The sample size of the study was calculated through Raosoft.com software with a hypothesized 50% population of physical therapists. Statistical conditions were a 99% confidence interval and 1 % margin of error. The estimated sample size calculated from the software was 449 participants. The sampling technique used in this study was convenient. Consent forms were taken before the data collection from research participants. The duration of the study was Oct 2026 to Mar 2026. The inclusion criteria were set as the age range between 22 to more than 50 years, physical therapists who completed 5 years of a doctorate and worked for at least 1 year as a clinical practitioner in a well-reputed healthcare institute. Physical therapists who had rheumatological, pathological, and vascular diseases of ankle or foot, acute trauma, fracture, and surgery, who had no experience in a clinical environment, and who were not willing to participate were excluded from our study. The questionnaire was used from the previous study.[16] and for assessment NRS(Numeric rating scale) ranging from 0 to 10 in which higher scores showed worse symptoms while lower scores showed no pain. Statistical analysis was done through SPSS version 23.

RESULT

The 449 total of research participants were recruited for the study. The age of the research participants ranged from 22 to more than 50 years of age, and most of the participants were from the 30 to 39 age group, around 163 (36.30%). Both gender male and female participants were included in this study. We collected the data from the research participants who were working in the inward and outward departments. Around 356 (79.28%) participants were working in OPD, and the experience of working was around 1 to 5 years or more than 5 years of working, as shown in Table No.1:

Table No.1: Demographical representations of the research participants.

S.NO.	VARIABLES	FREQUENCY (%)
1.	AGE 22-29 30-39 40-49 >50	 129 (28.73%) 163 (36.30%) 98 (21.82%) 59 (13.14%)
2.	GENDER Male Female	 256 (57.01%) 193 (42.98%)
3.	SETTINGS IPD OPD	 93 (20.71%) 356 (79.28%)
4.	EXPERIENCE 1-2 years 2-5 years >5 years	 104 (23.16%) 133 (29.62%) 221 (49.22%)

Volume 4, Issue 4, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

When we asked the research participants about the pain intensity of the patients they deal with. Research participants replied that patients most rating on a moderate level of the numeric rating scale, around 156 (34.74%), and around 35 (7.79%) patients marked the none level, and none level showed 0 as shown in Figure No.1:

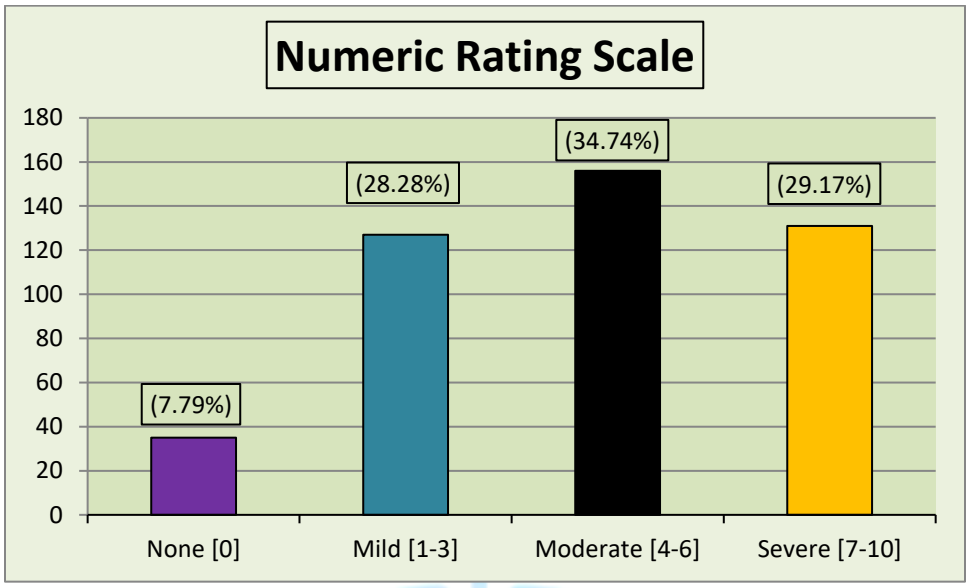

Figure No.1: Pain level of the patient.

When we collected the data from the research participants about the treatment outcome of the Alfredson protocol, which lies in poor, moderate, good, and excellent levels. Around 143 (31.84%) participants responded with excellent that they got an excellent treatment outcome from the Alfredson protocol, and about 77 (17.14%) responded with poor level that they didn't receive a good enough result from this protocol, as shown in Figure No.2:

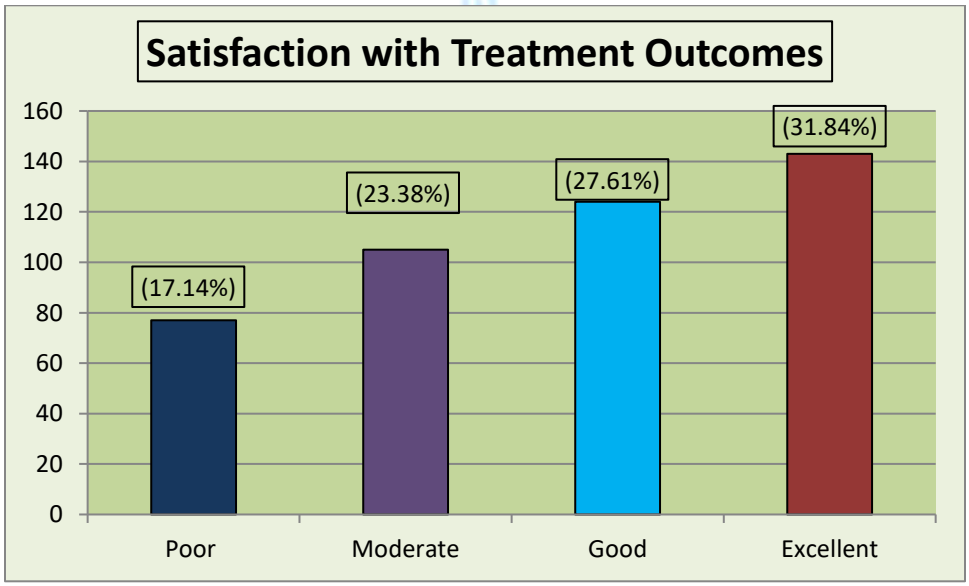

Figure No.2: Treatment Outcome of Satisfaction

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

DISCUSSION

The advanced method of treating patients related to Achilles tendinopathy is Alfredson eccentric exercise. The awareness of this conservative management method is rare among health care professionals.[17] As it is the 12-week program, which comprises performing heel drops regularly under control manner and under the supervision of a qualified professional. It helps in the reduction of pain and stimulates tendon adaptation.[18] Regarding the effectiveness of this intervention, a variety of studies reported the improvement in the function and reduction of pain. [19] The current study evaluates the awareness of implementation of the Alfredson eccentric exercise protocol in the management of Achilles tendinopathy.

In the present study, we observe that the physical therapists working in hospitals have less awareness i.e: 20.71% then the therapists working in outpatient departments in clinical setups. i.e: 79.28%. This shows that the usage of this intervention is widely used in OPDs as compared to IPD'S of hospitals. A study that has done an extensive observation of five years found a reduction in the symptoms of Achilles Tendinopathy; they used the VISA-A scores. They also reported that the Alfredson protocol reduced the severity of the problem, but mild pain persisted in a few of the subjects.[20]

In our study, the least awareness of the Alfredson protocol was found among physical therapists having 1 to 2 years of experience i.e: 23.16%, while therapists having more than 5 years of experience have 49.22% awareness, which shows the level of interest of senior physical therapists is higher and there knowledge regarding the protocol is valuable in the organizations where they were working. A study stated that they used the Alfredson protocol for the treatment of Achilles tendinopathy with 180 repetitions, and they found the result that it should be used according to the tolerance of the patients.[21]

The role of the numeric rating scale is to check the severity of pain in the person. In our srtudy physical therapists found the most common complaint of patients, according to the level, is moderate pain: 34.74%. Another study used the alternative method, i.e., Heavy Slow Resistance training, which consists of similar benefits and can give similar outcomes like alfredson protocol. They found that it can also provide satisfaction to patients with Achilles tendinopathy.[22]

CONCLUSION

Our study concludes that the awareness and implementation of alfredson protocol were mostly found in physical therapists having more than five years of working experience, which shows their interest in taking continuing education with clinical practice and also the application of evidence-based practice in the field of physical therapy. The Alfredson protocol of eccentric exercises helps patients reduce the symptoms of Achilles tendinopathy in a better way than other interventions offered by physical therapy management.

Author Contribution:

SM: Idea and concept, Manuscript writing
RI: Designing of study, and Manuscript writing
SI: Literature search and results writing
SI: Manuscript writing and Data collection
TT: Manuscript writing and Resources
THS: Data collection
AZ: Data collection
SS: Review and Editing
KJ: Final Draft

REFRENCES

Prudêncio DA, Maffulli N, Migliorini F, Serafim TT, Nunes LF, Sanada LS, Okubo R. Eccentric exercise is more effective than other exercises in the treatment of mid-portion Achilles tendinopathy: systematic review and meta-analysis. BMC Sports Science, Medicine and Rehabilitation. 2023 Jan 26;15(1):9.

Rafiq R, Ilyas Y, Aftab A, Sohail S, Zia K, Batool S, Jamil K. Prevalence of Achilles Tendinopathy among Physical Therapists of Pakistan: Prevalence of Achilles Tendinopathy. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences). 2023 Dec 31:19-23.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Ahmed M. Eccentric vs. Isometric Strengthening for Achilles Tendinopathy: A Randomized Controlled Trial. Journal of Health, Wellness and Community Research. 2024 Dec 31:e23-.

Kim MH, Lin CI, Henschke J, Quarmby A, Engel T, Cassel M. Effects of exercise treatment on functional outcome parameters in mid-portion achilles tendinopathy: a systematic review. Frontiers in Sports and Active Living. 2023 May 17;5:1144484.

Ryan D, O'Donoghue G, Rio E, Segurado R, O'Sullivan C. The effect of combined Action Observation Therapy with eccentric exercises in the treatment of mid-portion Achilles-tendinopathy: a feasibility pilot randomised controlled trial. BMC Sports Science, Medicine and Rehabilitation. 2022 Nov 29;14(1):201.

Qureshi AU, Hameed M, Umar M, Yasir U, Abbas Z, Jamil S, Masroor L, Arshad A, Tahir S, Raza MI, Yasir MU. A comparative study of the Graston technique and Alfredson protocol in the management of Achilles tendinopathy. Cureus. 2024 Jun 12;16(6).

Sivrika AP, Papadamou E, Kypraios G, Lamnisos D, Georgoudis G, Stasinopoulos D. Comparability of the effectiveness of different types of exercise in the treatment of Achilles tendinopathy: a systematic review. InHealthcare 2023 Aug 11 (Vol. 11, No. 16, p. 2268). MDPI.

Moreno MJ, Agergaard AS, Costa MA, Svensson RB, Magnusson SP, Scattone Silva R. Comparison between moderate-load and high-load exercises in the rehabilitation of runners with Achilles tendinopathy: Protocol for a blind randomized controlled trial. PLoS One. 2026 Mar 2;21(3):e0342934.

Radovanović G. *Evidence-Based High-Loading Exercise as a Novel Therapeutic Training Approach in Achilles Tendinopathy* (Doctoral dissertation, Kultur-, Sozial-und Bildungswissenschaftliche Fakultät).

Santacaterina F, Miccinilli S, Bressi F, Sterzi S, Bravi M. An overview of Achilles tendinopathy management. Osteology. 2021 Sep 29;1(4):175-86.

Merry K, Napier C, Waugh CM, Scott A. Foundational principles and adaptation of the healthy and pathological Achilles tendon in response to resistance exercise: a narrative review and clinical implications. Journal of Clinical Medicine. 2022 Aug 12;11(16):4722.

Griffin C, Daniels K, Hill C, Franklyn-Miller A, Morin JB. A criteria-based rehabilitation program for chronic mid-portion Achilles tendinopathy: study protocol for a randomised controlled trial. BMC musculoskeletal disorders. 2021 Aug 14;22(1):695.

Maetz R, Dube MO, Tougas A, Prudhomme F, Dubois B, Roy JS. Systematic review and meta-analyses of randomized controlled trials comparing exercise loading protocols with passive treatment modalities or other loading protocols for the management of midportion Achilles tendinopathy. Orthopaedic Journal of Sports Medicine. 2023 May 19;11(5):23259671231171178.

Burton I, McCormack A. Assessment of the reporting quality of resistance training interventions in randomised controlled trials for lower limb tendinopathy: A systematic review. Clinical Rehabilitation. 2022 Jun;36(6):831-54.

Traweger A, Scott A, Kjaer M, Wezenbeek E, Scattone Silva R, Kennedy JG, Butler JJ, Gomez-Florit M, Gomes ME, Snedeker JG, Dakin SG. Achilles tendinopathy. Nature Reviews Disease Primers. 2025 Mar 27;11(1):20.

Stevens M, Tan CW. Effectiveness of the Alfredson protocol compared with a lower repetition-volume protocol for midportion Achilles tendinopathy: a randomized controlled trial. journal of orthopaedic & sports physical therapy. 2014 Feb;44(2):59-67.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Sancho J, Malliaras P, Chimenti RL, Sancho I. Current clinical management of Achilles tendinopathy by Spanish physiotherapists: An observational study. Physical Therapy in Sport. 2025 May 1;73:57-67.

Ryan D, Rio E, O'Donoghue G, O'Sullivan C. " I've got a spring in my step" a qualitative study on participants experience of action observation therapy and eccentric exercises, a telehealth study for mid-portion Achilles tendinopathy.

Radovanović G, Bohm S, Arampatzis A, Legerlotz K. In Achilles Tendinopathy the Symptomatic Tendon Differs from the Asymptomatic Tendon While Exercise Therapy Has Little Effect on Asymmetries—An Ancillary Analysis of Data from a Controlled Clinical Trial. Journal of Clinical Medicine. 2023 Jan 31;12(3):1102.

Chimenti RL, Neville C, Houck J, Cuddeford T, Carreira D, Martin RL. Achilles pain, stiffness, and muscle power deficits: midportion achilles tendinopathy revision–2024: Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability, and Health from the Academy of Orthopaedic Physical Therapy of the American Physical Therapy Association. Journal of Orthopaedic & Sports Physical Therapy. 2024 Dec;54(12):CPG1-32.

Taylor JD, Corbitt A, Mathis RA. The effects of high-load slow-velocity resistance exercise training in athletes with tendinopathy: a critically appraised topic. Journal of Sport Rehabilitation. 2023 Jul 6;32(6):749-55.

Whale R, Hasani F, Haines T, Munteanu SE, Ellis K, Patel S, Buchholtz K, Warne J, Vallance P, Malliaras P. Assessing calf exercise fidelity among people with Achilles tendinopathy using videos recorded via Zoom®: an observational study. Disability and Rehabilitation. 2024 Feb 13;46(4):697-704.