Original Research Paper

Volume - 15 | Issue - 06 | June - 2025 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Physiotherapy

PREVALENCE OF ACHILLES TENDINOPATHY AMONG RECREATIONAL BADMINTON PLAYERS IN SOUTHERN PUNE.

Nishant Bhuta	Intern, St. Andrew's College Of Physiotherapy, St. Andrews College Of Physiotherapy, Manjari Phata, Indraprashtha Society, Hadapsar, Pune, Maharashtra 411028.
Dr. Venkatesan R	PT, Professor, St. Andrew's College Of Physiotherapy, St. Andrews College Of Physiotherapy, Manjari Phata, Indraprashtha Society, Hadapsar, Pune, Maharashtra 411028
Dr. Albin Jerome	PT, Principal & Professor, St. Andrew's College of Physiotherapy, St. Andrews College of Physiotherapy, Manjari Phata, Indraprashtha Society, Hadapsar, Pune, Maharashtra 411028

ABSTRACT **Background:** This study aimed to find the prevalence of Achilles tendinopathy among recreational badminton players in Southern Pune region. Badminton is a widely played sport which is often viewed as a low-risk sport but typically it incurs overuse injuries, particularly in the foot and ankle, with Achilles tendinopathy being predominant. Factors contributing to Achilles tendon injuries in badminton include specific footwork patterns and inadequate shoe design that does not sufficiently support or absorb shock. Despite being a popular sport, research on badminton-related injuries is limited and this highlights a need for greater attention in sports medicine. **Method:** The study enrolled 76 participants. The VISA-A Questionnaire was used to assess the prevalence and severity of Achilles tendinopathy. **Results:** This study found a prevalence of Achilles tendinopathy of 57.89% among recreational badminton players in the southern Pune region.

KEYWORDS : Badminton, achilles tendinopathy, prevalence.

INTRODUCTION

Badminton is a widely played sport and it is often perceived as a low-risk sport. However, it is associated with a significant incidence of overuse injuries, particularly involving the foot and the ankle. Among these injuries, achilles tendinopathy is one of the most prevalent conditions observed in recreational badminton players. Despite the relatively prolonged recovery period associated with sports injuries, most are anatomically concentrated in the foot and ankle. These injuries commonly include achilles tendinopathy and lateral epicondylitis. Although achilles tendon rupture is relatively rare among younger players, it is more frequently observed in older recreational athletes.[1]

Tendinopathy is a musculoskeletal disorder which is characterized by diverse pathological changes. In the acute stage, inflammation is predominant, marked by increased neutrophil migration, peritendinous oedema, local tenderness, and stiffness.[2] In subacute and chronic instances, inflammation appears to have a diminished role, resulting in complex pathophysiological manifestations. These include structural degeneration of the collagen matrix, partial rupture, and intratendinous neovascularization,[3] increased local concentrations of neuropeptides[4], and increased cell apoptosis[5] have been observed. It is widely known that chronic tendinopathies involve the degeneration of the tendon matrix and this leads to the loss of collagen fiber structure.[6-7]

Achilles tendon injuries in badminton players may result from a combination of factors, especially the unique footwork involved. This includes rapid forward movements with forceful heel strikes and eccentric work by the Triceps Surae (TS), alternating with backward toe running and concentric work of the TS. In addition to this, movements such as backward or combined back/sideward jumps, which involve forceful eccentric work by the TS, could contribute to the occurrence of Achilles tendon injuries in badminton players. These injuries may also arise from the persistent practice of movements involving rapid and alternating changes, imposing significant tension on the Achilles tendon and potentially leading to microtrauma. The current design of badminton shoes offer little to resolve this strain on the Achilles tendon. Many shoes commonly used in badminton feature a flat heel, limited shock absorption, and inadequate support for the foot.[1]

The Victorian Institute of Sports Assessment–Achilles (VISA-A) questionnaire is a reliable and validated tool used to assess the prevalence and severity of Achilles tendinopathy. It consists of eight questions addressing pain, functional limitations, and participation in sports activities. The total score ranges from 0 to 100, with lower scores indicating greater symptom severity. Due to its high reliability, the VISA-A is widely used in both clinical and research settings, including among badminton players.

Thus, the purpose of this study is to determine the prevalence of Achilles tendinopathy in recreational badminton players, emphasizing the need for awareness and professional training to prevent such injuries.

MATERIAL AND METHODS

A total of 76 participants were included in the study based on the inclusion and exclusion criteria. Consent was taken from every individual. Individuals were approached for participation and were thoroughly explained about the purpose and structure of the VISA-A questionnaire. Demographic data was noted. The VISA-A questionnaire, consisting of eight items scored from 0 to 100, was used to assess the prevalence and severity of Achilles tendinopathy. A score below 70 indicated the prevalence of tendinopathy, while a score above 70 suggested its absence. The collected data was analysed using SPSS 20.0 and Microsoft Excel 2013 software to calculate the overall prevalence among recreational badminton players. Data is represented in the form of frequency and percentage tables. Graphical presentation is used wherever necessary.

RESULT

A total of 76 participants were included in the study from aged between 25 to 40 years and all participants had played badminton for 3-5 hours per week to ensure consistent engagement with the sport. Individuals who participate in sports other than badminton and those with recent history of lower limb injuries were excluded.

Age Distribution

Interpretation: The below chart shows the age distribution among the sample respondents and it is observed that individuals aged of 25 to 30 years are more in number as compared to the other age categories.

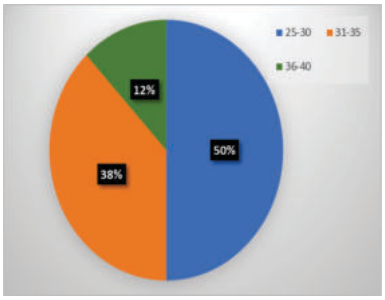

Figure - 1 Age Distribution

Prevalence of Achilles Tendinopathy

Interpretation: The below table 1 and figure 2 shows the distribution of Achilles tendinopathy prevalence among recreational badminton players based on their VISA-A scores. Out of the total participants, 44 players (57.89%) had a score below 70, indicating the prevalence of Achilles tendinopathy. In contrast, 32 participants (42.11%) scored 70 or above, suggesting no prevalence of tendinopathy. This suggests that more than half of the players in the study experience Achilles tendinopathy to some degree.

Table – 1 Prevalence Of Achilles Tendinopathy

VISA-A Score Range	Number of Participants	Distribution
Below 70	44	57.89%
70 and above	32	42.11%

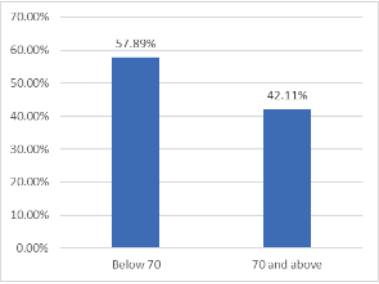

Figure – 2 Prevalence Of Achilles Tendinopathy

DISCUSSION

Despite being a popular sport worldwide, badminton has received limited attention from sports medicine professionals. Straining the tendon during physical activity is a significant pathological factor, and consistently overloading the Achilles tendon beyond its physiological capacity can result in micro-trauma. Repeated micro-traumas, combined with uneven tension between the gastrocnemius and soleus muscles, create frictional forces among tendon fibers and lead to abnormal stress concentrations within the tendon. This can result in inflammation of the tendon sheath, degeneration, or both. Without adequate recovery time, these changes may progress to tendinopathy.[8]

Overuse injuries are prevalent among badminton players, primarily due to the sport's high-intensity movements and repetitive actions. A significant contributor to these injuries is the repetitive loading experienced during various strokes and dynamic movements. The combined action of the triceps surae (TS) muscle group performing eccentric contractions, along with rapid forward movements and abrupt stops involving forceful heel strikes, places substantial stress on the Achilles tendon. Additionally, movements such as backward toe running and backward or combined backward/sideward jumps, which also engage the TS eccentrically, further exacerbate the load on the tendon. These repetitive and high-impact activities can lead to microtrauma within the tendon fibers. If these microtraumas are neglected and players continue to engage in play without adequate recovery, it can result in progressive degeneration of the Achilles tendon, ultimately leading to Achilles tendinopathy.[9]

This study aimed to find the prevalence of Achilles tendinopathy among recreational badminton players, for which the VISA-A questionnaire was used. The questionnaire consists of 8 questions, which were used to check the prevalence of Achilles tendinopathy. These questions addressed various issues, including discomfort and stiffness around the Achilles tendon, pain during stretching, discomfort while walking and climbing stairs, pain experienced during single heel raises and single-leg hops, and the number of hours spent playing. In this study, a total of 76 samples were collected from players belonging to the 25–40 age group. Out of these 76 samples, 50 were male badminton players, that is, 65.7%, and 26 were female badminton players, that is, 34.3%. Upon analysing the participants' responses, the following findings were recorded: Out of the 76 samples collected, 32 participants (42.11%) showed negative results, while 44 participants (57.89%) showed positive results, as mentioned in Table 1. This indicates that the prevalence of Achilles tendinopathy among the badminton players in this study was 57.89%.

In 2020, a study published in the Indian Journal of Public Health Research & Development by Aditi B. Churi and colleagues investigated the prevalence of Achilles tendinopathy pain among sub-elite badminton players aged 18–25 years. The study included 90 participants (50 males and 40 females), all of whom had been playing badminton for five or more years and had experienced Achilles tendinopathy. Using the VISA-A questionnaire to assess pain severity, the researchers found a statistically significant association between Achilles tendon pain and sub-elite badminton players ($p < 0.0001$). The study concluded that these athletes commonly suffered from mild to moderate intensity pain in the Achilles tendon during gameplay.[10]

Many badminton players often neglect to wear proper badminton shoes, which can result in injuries. These shoes are specifically designed to prevent injuries and protect the Achilles tendon by providing arch support that helps alleviate pain and maintains foot alignment. Footwear with sufficient arch support and cushioning can distribute body weight evenly, reducing strain on the tendon. Additionally, shoes with a slightly elevated heel can help relieve tension on the Achilles tendon, especially for individuals with tight calf muscles. Conversely, wearing ill-fitting or inappropriate shoes can exacerbate issues with the Achilles tendon.

It is essential to incorporate proper warm-up and cool-down exercises before and after sports activities. Consistently engaging in rapid, dynamic movements can place significant stress on the Achilles tendon, potentially causing microtrauma and injuries that lead to pain and reduced playtime. In addition, performing eccentric exercises is vital, as they can enhance the range of motion in the dorsiflexors.[11]

CONCLUSION

Achilles tendinopathy is fairly common among recreational badminton players, which is quite concerning. This finding emphasizes the significance of knowledge and the requirement for professional training for badminton players. These measures will allow the prevalence of this serious condition to decline which might improve the quality of life of these recreational badminton players.

REFERENCES

1. Actaradiologica. 1998 Jan 1;39(6):612-9.Jorgensen U. Badminton injuries. Sports Med. 1999;10(1):59-64.
2. Paavola M, Kannus P, Järvinen TA, Järvinen TL, Józsa L, Järvinen M.Treatment of tendon disorders. Foot Ankle Clin. 2002Sep1;7(3):501-13.
3. Öhberg L, Lorentzon R, Alfredson H. Neovascularisation in Achilles tendons with painful tendinosis but not in normal tendons: an ultrasonographic investigation. Knee Surgery, Sports Traumatology, Arthroscopy. 2001 Jul; 9:233-8.
4. Alfredson H, Forsgren S, Thorsen K, Fahlström M,Johansson H, Lorentzon R. Glutamate NMDAR1 receptors localised to nerves in human Achilles tendons. Implications for treatment?. Knee Surg Sports Traumatol Arthrosc. 2001 Mar29;9(2):123-6.
5. Lian Ø, Scott A, Engebretsen L, Bahr R, Duronio V, Khan K. Excessive apoptosis in patellar tendinopathy in athletes. Am J Sports Med. 2007 Apr;35(4):605-11.
6. Khan KM, Cook JL, Bonar F, Harcourt P, Åstrom M.Histopathology of common tendinopathies. Sports Med. 1999 Jun 1;27(6):393-408.
7. Paavola M, Paakkala T, Kannus P, Järvinen M. Ultrasonography in the differential diagnosis of Achilles tendon injuries and related disorders: a comparison between pre-operative ultra sonography and surgical findings. Acta radiol. 1998 Jan 1;39(6):612-9.
8. Young JS, Maffulli N. Etiology and epidemiology of achilles tendon problems. The Achilles Tendon. 2007 Sep 15:39-49.
9. SURESH M, SHYLAJA R, ASOKAN SA. PREVALENCE OF ACHILLES TENDINOPATHY AMONG RECREATIONAL BADMINTON PLAYERS. Int J Pharma Bio Sci. 2018 Jan;9(1):229-31.
10. Churi AB, Varadharajullu G, Chotai KT. Prevalence of Achilles Tendinopathy Pain in Sub-Elite Badminton Players. Indian Journal of Public Health Research & Development. 2020 May 18;11(5):8-13.
11. Jørgensen U, Winge S. Epidemiology of badminton injuries. International journal of sports medicine. 1987 Dec;8(06): 379-82.