

ORIGINAL ARTICLE

Analysis of the Burden of Patellar Tendinopathy among Gym Goers in Guwahati

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ABSTRACT

Introduction: The individuals going to gym perform high intensity work of both upper body and lower body during their workout session in gym. Therefore, it has become one of the main reasons for various musculoskeletal injuries and pain. This study evaluated the prevalence of musculoskeletal pain and injuries in gym goers in Guwahati.

Aims: To obtain the prevalence of patellar tendinopathy among gym goers in Guwahati.

Materials and Method: This cross-sectional study included 294 gym members, both male and female, aged between 18 and 60 years, from selected fitness centers in Guwahati. Patellar tendinopathy pain was assessed using the VISA P questionnaire.

Results: The study includes 294 participants in which 53% had sustained injuries while working out at the gym and 46% had pain in the knee.

Conclusion: This study highlights the multifaceted nature of injury risks in gym settings, influenced by gender, age and exercise habits. To enhance gym safety, it is essential to develop comprehensive, personalized injury prevention programs that address these diverse factors. Such an approach can foster a safer and more effective fitness environment for all gym members in Guwahati.

KEYWORDS

• Musculoskeletal pain • prevalence • Physical fitness

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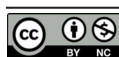
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INTRODUCTION

Patellar tendinopathy, often referred to as Jumper's knee, is a condition that affects the patella and is primarily brought on by functional stress overload from strenuous jumping exercises. It is also characterised by activity-related pain in the proximal patellar tendon.^{1,2} It is now recognized as a chronic injury caused by misuse of the knee extensor mechanism, which frequently has a long, repeated, bilateral natural course. The development of this pathology has been linked to a number of extrinsic factors, including training frequency, performance level, ground hardness, and weekly jump count, as well as a number of intrinsic factors, including ligamentous hyperlaxity, lack of muscle flexibility, Q-angle, patellar height (high), tenderness, and pattern of force development. Weight training, jumping performance, body weight, and total load have all been linked to an increased risk of developing patellar tendinopathy.³ Acute injuries like sprains, strains, tendon avulsions, and compartment syndromes are frequently sustained while lifting weights. Rotator cuff and patellar tendinopathies, stress injuries, and fractures of the vertebrae, clavicles, and upper extremities are examples of common chronic injuries.⁴ The shoulder, knee, elbow, and spine's vertebrae are the most commonly injured joints. Overuse, short recovery times between sessions, poor technique, inadequate training in certain body areas, and repeated use of heavy loads are the main causes of musculoskeletal pain and injury risk.⁵⁻⁷

A study carried out in Saudi Arabia investigated the prevalence of injuries among gym patrons. According to the survey, musculoskeletal injuries were reported by 29.2% of respondents. 40.5% of injuries were to the shoulder, 32.4% to the foot, and 25.7% to the back.⁸ According to a prior comprehensive review, sports like swimming or cycling have lower risks of musculoskeletal injuries than certain activities like weightlifting and gymnastics. The ankle (20.9%) and knee (19.0%) were the most frequently injured body parts, and the muscles (55.7%) were the most frequently injured soft tissues.⁹ Squatting is a common strength training activity, and it's crucial to understand loading and posture to prevent overuse injuries. A prior study verified that conducting limited squats increased the

thoracic curvature, which resulted in back strains, while performing unrestricted squats increased knee range of motion and showed a minor number of segmental movements at the trunk.¹⁰ As we've already covered, jumper's knee is mostly an overuse injury that can happen when workout sessions are completed without sufficient recovery time to for tendon reconstruction. It makes sense that the following factors raise our chance of developing patellar tendinopathy such as more training sessions per week, more training sessions overall, more weekly weight training sessions etc.¹¹ The aim of this study was to analyse the problem of patellar tendinopathy in Guwahati. The prevalence and types of injuries sustained by gym members are not well documented, despite the fact that gyms are becoming more and more popular in Guwahati. This knowledge gap allows for a thorough investigation to comprehend the patterns of injuries and their causes, which is crucial for gym owners, fitness instructors, and medical professionals to create focused interventions that can reduce the risk of injuries and encourage a safer exercise environment.

METHODS

This cross-sectional observational study included 294 male and female subjects ranging in age from 18 to 60 years. Participants were chosen using a convenient sample strategy, and gyms from various regions of Guwahati were randomly chosen using the lottery method to guarantee a diverse geographical representation. Individuals who had attended the gym on a regular basis for at least three months were eligible to participate. To avoid confounding factors, participants having a past diagnosis of patellar tendinitis before to beginning gym workouts, a history of knee surgery, existing knee pathologies, or who had received knee injection therapy were excluded from the study.

The study lasted three months, from March to May 2025. Participants who satisfied the inclusion criteria were approached and informed of the study's goal and procedures. After providing written informed consent, individuals were asked to complete the VISA-P questionnaire, a standardized and validated outcome measure established particularly to assess symptoms and functional limitations associated with patellar tendinopathy.¹² This

measure contains eight elements that focus on pain, functional capacity, and sports engagement.

Participants were fluent in English, and any challenging terms in the questionnaire were taught to ensure correct responses. After completing the questionnaire, each individual's scores were tallied. The data were then statistically examined to determine the overall prevalence of patellar tendinopathy among gym visitors in Guwahati, as well as variations based on age and gender. The findings provide light on the prevalence of tendon-related disorders in the active urban population, emphasizing the necessity for focused interventions and preventive methods in fitness settings.

294 participants of age group 18-60 years were selected according to the inclusion and exclusion criteria

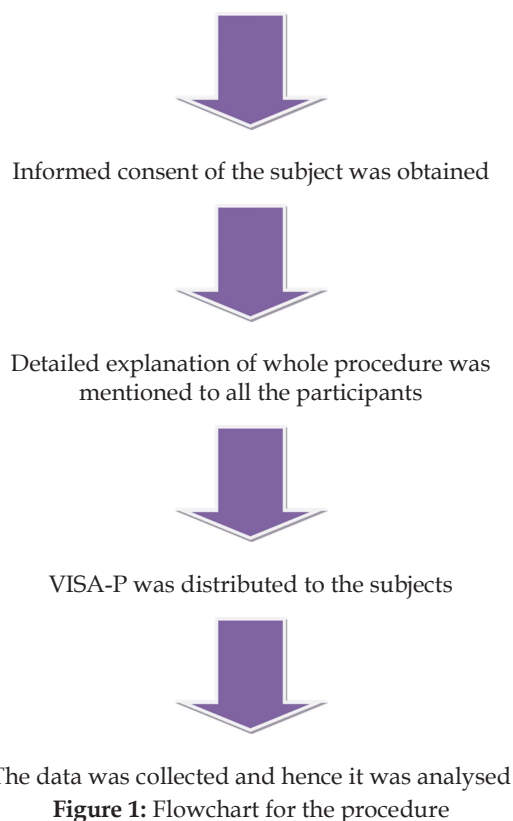


Figure 1: Flowchart for the procedure

DATA ANALYSIS AND RESULTS

Table 1: No. of participants in each gender

Gender	Count
Male	253
Female	41

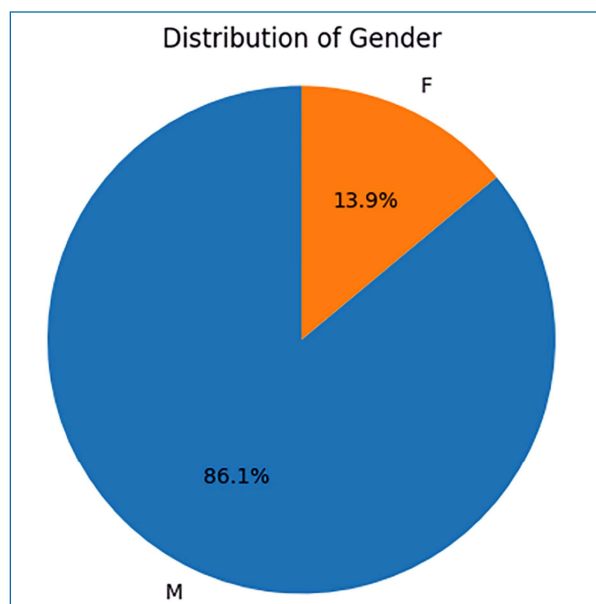


Figure 2: Percentage of distribution of gender

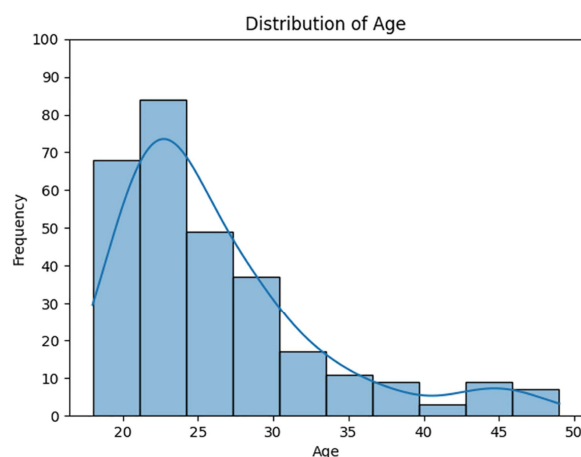


Figure 3: Distribution of Age

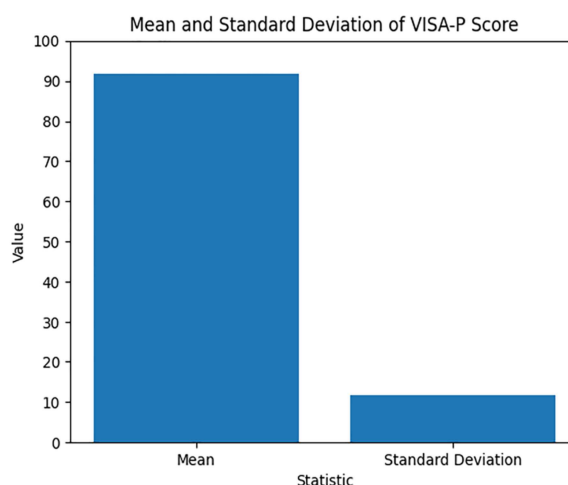


Figure 4: Mean and Standard Deviation of VISA-P Score

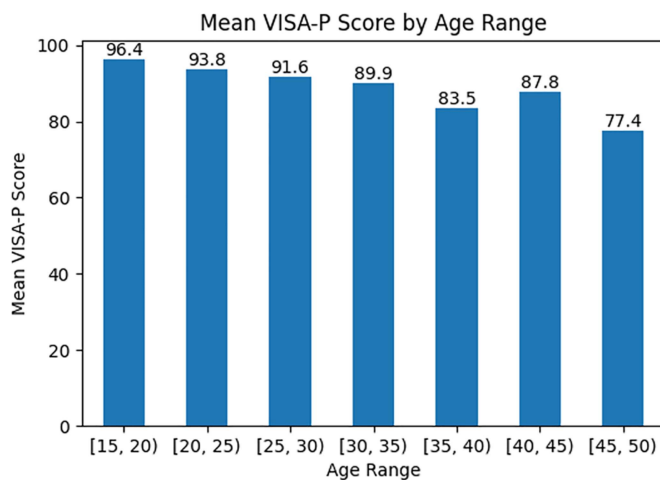


Figure 5: Mean VISA-P score by Age Range

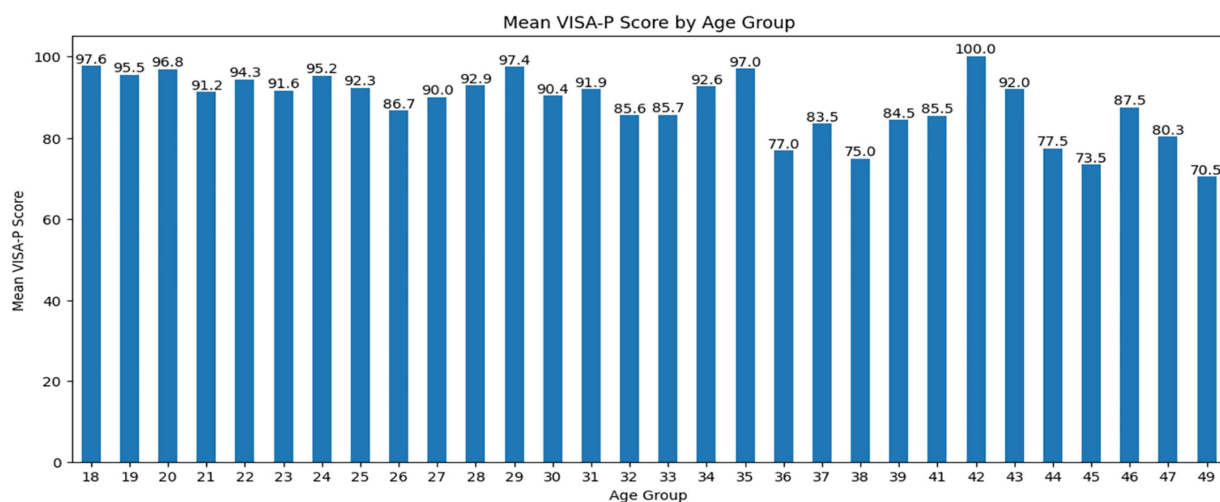


Figure 6: Mean VISA-P score by Age Group

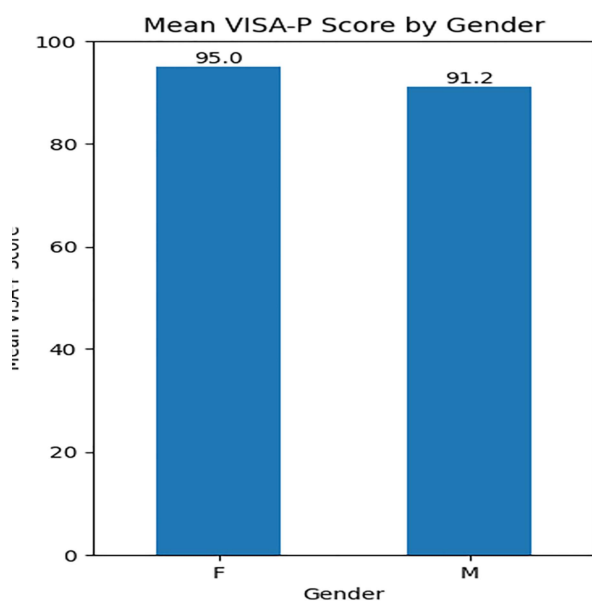


Figure 7: Mean VISA-P Score by gender

Table 2: Distribution of participants as per their age

Age range	Pain		t-value	p-value
	Mean	SD		
(15,20)	96.45	7.07	1.78	0.08
(20,25)	93.8	10.84	1.71	0.09
(25,30)	91.55	11.99	-0.14	0.89
(30,35)	89.85	9.44	-0.92	0.36
(35,40)	83.55	13.9	-2.29	0.02
(45,50)	77.36	13.94	-4.01	0.0

Table 3: Distribution of participants as per their Pain level

Score	Level of Pain	Number of Participants	Percentage
100	None	157	5.4
90-99	Mild	23	7.8
80-89	Moderate	73	24.8
<80	Severe	41	13.9

Table 4: Mean and standard deviation values of Pain among the participants

Total Participants	Pain		One Sample t-Test	p-value
	Mean	SD		
294	91.76	11.6	1355.64	<0.001

After analysing the data from this study, it was observed that there is a prevalence of patellar tendinopathy in gym goers. There were 157 gym goers with no pain after exercising, or they were asymptomatic. 23 of them had mild pain after exercising, 73 had moderate pain, and 41 had severe pain after exercising. The prevalence of patellar tendinopathy was 46% in this study.

DISCUSSION

The main purpose of this study was to determine the prevalence of patellar tendinopathy in gym goers. Its goal was to assess the severity of the pain symptoms at the patellar tendon in gym goers, after exercising, according to the VISA-P questionnaire. Many studies have been conducted on knee and tendon injuries in athletes and non-athletes of various sports such as volleyball, basketball etc. However, very few studies have been conducted on the clinical severity of patellar tendinopathy in people exercising in the gym. The study showed 7.8% of gym goers had mild pain, 24.8% had moderate pain, and 13.9% had severe pain. The observed results were statistically significant (p value ≤ 0.001). Compared to recreational weightlifters, professional weightlifters undergo more advanced preparation for contests, which causes their tendons to adapt to such high-intensity training more quickly.

Recreational weightlifters are more likely to experience patellar tendon pain if they extend their knees excessively or abruptly switch from a low-intensity to a very high-intensity workout. Numerous studies indicate that young people and adolescents are more likely to have this syndrome.^{13,14} Additionally, Bode *et al.* discovered that the oldest third of basketball players they looked at had a higher prevalence of patellar tendinopathy. They postulated that a higher risk of tendon damage could arise from older athletes' slower metabolisms and the delayed initiation of collagen type I synthesis more than 48 hours after exercise.¹⁵ Numerous causes, both internal and external, may be involved in the occurrence of this

illness in young people, such as abnormalities in strength and postural alignment, as well as muscle weakness or inflexibility.¹⁶ A study showed a 20% incidence of patellar tendinopathy in athletically active people.¹⁷ According to another study, patellar tendon injuries occur mostly in football and basketball players with a 95% of incidence rate.¹⁸ Our present study showed that the prevalence of patellar tendinopathy in gym goers is 46% with statistical significance. The probable results for the prevalence could be many factors such as age, practising hours, improper biomechanics of training, lack of adequate duration of warm-up and cool down activities. These factors play an important role while exercising in the gym. This study will be beneficial for gym goers for evaluation of their symptoms to rule out the condition of patellar tendinopathy. Once the condition is evaluated, further treatment can be taken by the gym goers. This can also help to improve the biomechanics of gym goers to enhance their performance in the gym.

Limitations

There are several limitations on this study. Because research is cross-sectional, it is unable to demonstrate a causal link between patellar tendinopathy and gym activities. Recall bias could result from the VISA-P questionnaire's dependence on self-reported data. In-depth data on exercise frequency, intensity, and biomechanics were absent from the study. Furthermore, the results may not apply to other groups because they are restricted to Guwahati gym goers.

CONCLUSION

In the final analysis, it can be concluded that people exercising in the gym exhibit a considerable prevalence of patellar tendinopathy. Their age and pain incidence are linked in a unique and significant way. Additionally, musculoskeletal injuries are more likely to occur in those who go to the gym to lose weight and increase their level of physical fitness. To prevent injury, it's critical to use caution and extra care when performing strength training exercises. It is crucial to fully comprehend appropriate workout information before beginning any gym-based activities.

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