ISSN: 2321-5690
IJOPT
INDIAN JOURNAL OF PHYSICAL THERAPY
AN INTERNATIONAL JOURNAL
INDIAN JOURNAL OF PHYSICAL THERAPY
AN INTERNATIONAL JOURNAL
editor.ijopt@gmail.com

# EVALUATION OF SHOULDER PERFORMANCE AND AWARENESS OF PHYSIOTHERAPY IN RECREATIONAL CRICKET PLAYERS – A SURVEY STUDY

**Nidhi Panchal[1], Aryan Patel[2], Ankit Bhagat[2]**

[1]Assistant Professor, Shree M. M. Shah Physiotherapy College, Mahemdavad, Gujarat, India
[2]Intern, Shree M. M. Shah Physiotherapy College, Mahemdavad, Gujarat, India

**DOI: https://doi.org/10.63299/ijopt.060110**

## ABSTRACT

**Background:** Cricket is the most popular sport played around the globe. Cricket players require optimum balance between power, strength, speed, accuracy and endurance to avoid any injuries which may affect their game.

**Objective:** Aim of the study to analyze shoulder-related problems experienced by cricketers in the Ahmedabad and Mahemdavad districts of Gujarat, India

**Methods:** A survey of professional and recreational cricket players in the Mahemdavad and Ahmedabad districts of Gujarat, India, was conducted from 5th December 2024 to 5th March 2025. Participants completed a two-part Google e-survey, accessible online via a link distributed through social media and email.

**Results:** Out of 4,000 cricket players, 306 completed the survey (7.65% response rate, 95% CI, 5% margin of error). The majority of respondents were male (63.7%) and between the ages of 15 and 25 (64.8%, 198 out of 306). The result obtained in this survey were analyzed using basic statistics through Microsoft Excel and inbuilt Google form calculation.

**Conclusion:** Majority of the cricket players are facing issues related to power and strength especially during serving the batting and overarm bowling. Majority of players are aware about the role of physiotherapy in improving the performance but have limited knowledge of advance rehabilitation protocols like advance thrower's ten exercises. There is a strong need to design a strength training protocol addressing the shoulder performance based on fitness & strength parameters of the cricket players which would enhance player's performance and thereby improving their performance.

**Keywords:** Cricket, Plyometrics, Advance Throwers Ten, Shoulder Performance and Strengthening Exercise

# INTRODUCTION

### Introduction of Cricket Sport

The origin of cricket is unknown, but historians and academics agree that it was an established game in southern England in the 16th century. In the British Empire, cricket was brought in to "civilize" the populace and uphold the legitimacy of the ruling class. The Marylebone Cricket Club, which was founded in 1787, is recognized as the game's custodian and approves any changes to the regulations proposed by the International Cricket Council (ICC).[1]

### Introduction of Recreational Players

A recreational athlete engages in physical exercise but does not devote the same level of focus and intensity to competition preparation as an elite or competitive athlete. They play sports primarily for enjoyment, social interaction, and physical fitness. Former athletes who still like competing within their age group are considered recreational athletes.[2] There are numerous established benefits of recreational sports for an individual's social, mental, and physical health.[3]

### Problems in Recreational Athletes in Cricket

Injuries or pain that impact the musculoskeletal system—which comprises joints, ligaments, muscles, tendons, nerves, and supporting structures in the neck, back, and limbs—are known as musculoskeletal diseases (MSDs). Numerous factors, including getting hit by a cricket ball or bat, making fast rotations, sliding and diving, running into other players, and developing overuse issues, can result in musculoskeletal pain in cricket players. Players must understand that prevention is better than treatment. The back, shoulders, knees, and wrist are just a few of the body parts that might be impacted by MSDs. In cricket, sprains, strains, stress fractures, ligament tears, and overuse disorders are common musculoskeletal issues. Anthropometric characteristics, training experience, and weekly practice hours all affect the likelihood of these injuries, illustrating the complex injury incidence pattern of the sport.[4]

Acute or chronic pain affecting bones, muscles, ligaments, tendons, and nerves that results from a variety of musculoskeletal illnesses is referred to as musculoskeletal pain. This kind of pain, which can range from localized discomforts to neuropathic diseases, is common and poses a serious socioeconomic and medical burden on a global scale.[5]

The shoulder complex has a large range of motion where the scapula rotates closely with the clavicle and has multiple muscle attachments connecting to the thorax. At the extremely mobile but intrinsically unstable glenohumeral joint, the vital rotator cuff muscles serve to secure the humerus to the scapula. The scapula serves as the foundation of motion for the upper arm, and a stable joint enables the shoulder's kinematic chain to efficiently transfer loads produced in the torso and lower limbs. Thus, scapular kinematics, muscle forces, and joint loads across the glenohumeral joint are crucial to comprehending the risk of injuries at the glenohumeral joint.[6] (figure 1)

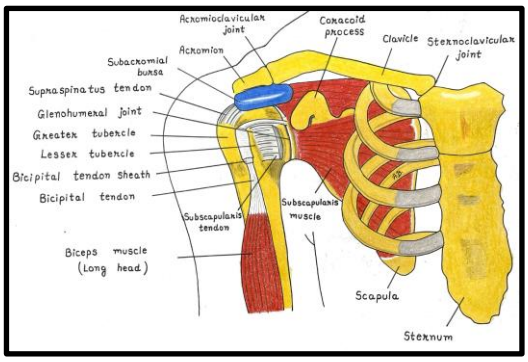


**Figure 1: Anatomy of Shoulder Joint**

For the shoulder joint, there are numerous rehabilitation regimens that incorporate various exercises to ensure the joint is working properly.

Shoulder joint strengthening and stretching exercises are one of them.[7] Protocols such as Thrower's Ten exercises, Advanced Throwers Ten exercises, and plyometric drills that aim to start aggressive strengthening exercises, improve power and endurance, perform functional drills, and progressively start throwing activities can be incorporated into the advanced strengthening phase.[8]

**Advanced Throwers Ten Exercise Program**

A modified version of Thrower's ten program, called the Advanced Throwers Ten Exercise Program, was published by Wilk et al. (2011). It combines the concepts of dynamic stability, coactivation, high-level neuromuscular control, endurance, rotator cuff facilitation, proper posture, core strength/ endurance, and coordination in a particular way to allow an athlete to transition smoothly into an interval throwing program and get ready to resume sports participation. It also includes varying degrees of sustained isometric holds on muscles. The exercises in this program demand high levels of proprioceptive and neuromuscular control bilaterally, serving to enhance the dynamic stability characteristics of the upper quarter, trunk, lumbopelvic complex, and lower extremity. Due to their observable deficiencies in the athlete who throws overhead, the shoulder external rotator, scapular retractor, protractor, and depressor muscles are often the focus of attention. The Advanced Throwers Ten Exercise Program focuses on endurance training for the stabilizing muscles that maintain proper trunk and lower extremity position while throwing, in addition to the shoulder and scapulothoracic muscles. In addition to improving proprioception, strength, and dynamic stability, these workouts foster the kind of high-level endurance needed to let an athlete resume a demanding, repetition-based sport like throwing. An extra crucial step for the thorough rehabilitation of the overhead throwing athlete is the Advanced Throwers Ten Exercise Program. By applying advanced concepts of dynamic stabilization, neuromuscular control, rotator cuff facilitation, and coordination in the application of throwing-specific exercises in a distinctive and progressive manner, it serves as a bridge, easing the transition from rehabilitation to return to competitive throwing.[9]

**Plyometric exercise**

Plyometric exercise is defined as powerful muscular contractions post rapid stretching or dynamic loading of the same muscle group which includes quick powerful movements that involve a pre-stretch of a muscle just before its contraction. Because it raises the neuromuscular system's sensitivity by increasing the excitability of neurological receptors, the pre-stretch is the most crucial stage of plyometric exercise. Another name for plyometrics is stretch-shorten exercises. Body proprioceptors such the muscle spindle and the Golgi tendon organs (GTO) are stimulated by the stretch. The muscular belly contains a stretch receptor called the muscle spindle. The agonist and synergist muscles' extrafusal muscle fibers contract in response to a brief stretch stimulus to the muscle spindle reflex. This reflex happens in 0.3 to 0.5 milliseconds, which is extremely quick. Health care providers should include a range of plyometric functional exercises of the anterior and posterior musculature in a sport-specific pattern following conventional shoulder-strengthening exercises and prior to starting a full throwing progression, as plyometrics are most commonly utilized in extremity strength and power exercise programs.[10]

Targeted exercises can improve a cricketer's bowling, batting, and fielding skills by strengthening the relevant muscles. Players struggling in any of these areas can reduce their difficulties and enhance performance through such training. To gain a deeper understanding of performance issues related to shoulders, it's crucial to identify the specific concerns within the cricket community. Therefore, this study **aims** to analyze

shoulder-related problems experienced by cricketers in the Ahmedabad and Mahemdavad districts of Gujarat, India. The research will also assess the players' familiarity with physical therapy rehabilitation protocols, including conventional physiotherapy, the "Thrower's Ten" program, and plyometric exercises.

## METHODOLOGY

A survey of professional and recreational cricket players in the Mahemdavad and Ahmedabad districts of Gujarat, India, was conducted from 5th December 2024 to 5th March 2025. Participants completed a two-part Google e-survey, accessible online via a link distributed through social media and email. The first section collected demographic information, while the second contained a cricket-related questionnaire. Participation was voluntary and confidential, as communicated to all participants. Because the collected data posed no risk of harm, Ethical Review Board certification was deemed unnecessary.

This survey (Annexure Table 1) explored cricket players' experiences and knowledge. Questions 1-6 gathered demographic and background information, including player type, playing location, history shoulder injury, and playing duration. Questions 7-12 focused on difficulties players encounter while bowling, batting, and fielding. Finally, questions 13-18 assessed players' awareness of and willingness to use physiotherapy. Data analysis, using basic statistics (counts and percentages), was performed with Microsoft Excel and inbuilt Google Form calculations.

**Table 1: Description of Questions and Responses in the Survey**

| Questions | Response |
|---|---|
| **Questionnaire** | |
| Q-1 What is your cricket playing style? | Professional (District, National, International)<br>Recreational (Club player, Hobby) |
| Q-2 Where do you usually play cricket? | Ahmedabad<br>Mehmdabad |
| Q-3 Do you have a history of shoulder injury? | Yes<br>No |
| Q-4 How long have you been playing cricket? | 1 Year<br>2 Years<br>3Years<br>More than 4 Year |
| Q-5 How many hours do you usually play cricket each week? | 1 Hour<br>2 Hours<br>3 Hours<br>More than 4 Hours |
| Q-6 Do you have a professional coach right now? | Yes<br>No |
| Q-7 Are you having any difficulty in bowling? | Yes<br>No |

| | |
|---|---|
| Q-8 Which kind of bowling do you use? | Throw<br>Overarm |
| Q-9 Are you having trouble with your throw bowling technique? | Yes<br>No |
| Q-10 Are you having trouble with your overarm bowling technique? | Yes<br>No |
| Q-11 Are you having any difficulty in batting? | Difficulty in power<br>Difficulty in strength<br>Difficulty in reaction time<br>No difficulty |
| Q-12 Are you having any difficulty during fielding? | Difficulty in power<br>Difficulty in strength<br>Difficulty in reaction time<br>No difficulty |
| Q-13 Have you ever heard about Physiotherapy? | Yes<br>No |
| Q-14 Have you undergone any Physiotherapy treatment for your Shoulder joint? | Yes<br>No |
| Q-15 Have you heard about Stretching or Strengthening training for Shoulder muscle? | Yes<br>No |
| Q-16 Have you heard about Plyometric Training for Shoulder muscle? | Yes<br>No |
| Q-17 Have you heard about advanced Thrower Ten Exercise? | Yes<br>No |
| Q-18 Are you interested in evidence-based Physiotherapy to enhance Strength, Power and Reaction time? | Yes<br>No |



## RESULTS AND DISCUSSION

Out of 4,000 cricket players, 306 completed the survey (7.65% response rate, 95% CI, 5% margin of error). The majority of respondents were male (63.7%) and between the ages of 15 and 25 (64.8%, 198 out of 306) which were shown in figure 2 and 3.

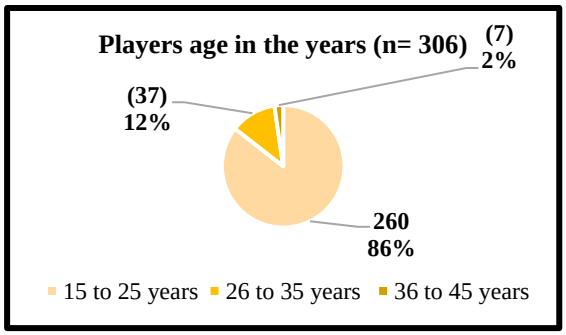


**Figure 2: Pie chart of Players Age in Year**

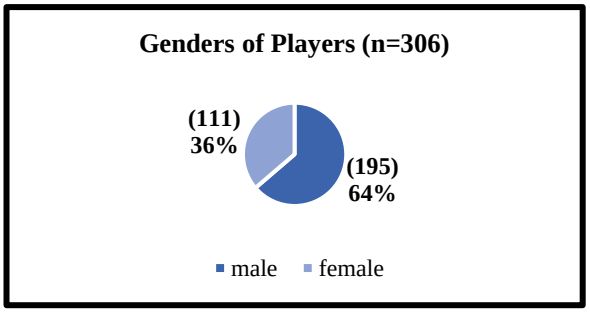


**Figure 3: Pie chart of Players Gender**

The survey explored several aspects of the cricket players' involvement in the sport. Questions 1 and 2 revealed that the vast majority (85.9%) were recreational players (Figure 4), with most hailing from Ahmedabad (65%) and the remainder from Mahemdavad (34%) (Figure 5). Questions 3 through 6 indicated that the players typically engage in cricket for one hour per week without a coach, and have done so for over four years without experiencing shoulder injuries. Questions 7 through 12 investigated shoulder-related difficulties and potential issues with muscle strength, power, and reaction time. Finally, questions 13 through 18 assessed the players' knowledge of physiotherapy, current or past treatment, and familiarity with shoulder strengthening exercises. Overall, the data showed that 79.4% of players had no history of shoulder injury and had been playing for at least four years (55.6%), typically for one hour per week (39.9%) without coaching (88.6%). While a substantial majority (84.6%) were aware of physiotherapy, 78.1% had ever received for shoulder issues.

This survey explored players' difficulties with batting, bowling, and fielding, as well as their knowledge of shoulder-strengthening exercises. The results revealed that overarm bowling was the most common challenge, with many players reporting issues with strength, power, and reaction time. While 79.4% of players reported no shoulder problems, statistical analysis ($p < 0.05$) showed a significant relationship between shoulder injury history, years of playing, weekly playing duration, and professional coaching. However, questions 7 through 18 ($p > 0.05$) indicated no statistically significant difference, suggesting that players need flexibility, muscular strength, coordination, synchronicity, and neuromuscular control for arm strength.

Rounded shoulders and forward head posture, resulting from weak scapular retractors and deep neck flexors, change scapular resting position and disrupt normal scapulohumeral rhythm, leading to reduced shoulder performance. Sport-specific adaptations exacerbate this issue[11].

Shoulder performance in Cricket players is a known fact as various literatures have already reported. To understand the severity of shoulder joint injury in cricket players around Ahmedabad and Mahemdavad, Gujarat prior to this study; a survey was undertaken by us. According to this survey study sixty-three cricketers (21%) reported shoulder injury during playing cricket with age range 15 to 45 years. The finding of this survey study is similar to previous literature by Pope and Croft which mentions that forty-eight cricketers (36%) reported shoulder pain during the 2003 playing season, which is greater than the 21% recorded for a normal population of 232 randomly selected adults, with age range 18–75 years[12].

Our survey of cricket players revealed significant challenges with power and strength during batting (16% and 19%, respectively) and fielding (8% and 9%, respectively). A substantial 86 players reported bowling difficulties, with 52% using overarm and 48% throw bowling techniques. These findings align with previous research indicating that overhead athletes, like cricketers, exhibit unique musculoskeletal profiles characterized by excessive shoulder motion and reduced glenohumeral joint stability. To address this, dynamic stabilization exercises, such as the Advanced Throwers Ten, are crucial. These exercises facilitate rotator cuff function, neuromuscular control, and sport-specific coordination, bridging the gap between rehabilitation and competitive play[13].

While commonly used for lower limb rehabilitation, plyometric exercises leverage a muscle prestretch before concentric contraction to generate rapid, powerful movements. This prestretch is crucial for enhancing neuromuscular reactivity by increasing the excitability of neurological receptors. Additionally, the elastic tissues' recoiling capacity plays a vital role.

The stretch (eccentric contraction) stores elastic energy, which is then released during the concentric contraction, augmenting power output. Thus, plyometrics focus on the specific adaptation to imposed demands (SAID) principle to develop muscle power and strength.

## CONCLUSION

Limitation of this study was relatively less sample size which can have statistical impact on the outcomes of the study. Also, in order to get maximum responses from the known sample area the survey was kept short and simple and we had no control over the participants responses which can lead to selection bias and majority of the survey participants were cricket players. Through this survey we came to know that majority of the cricket players are facing issues related to power and strength especially during serving the batting and overarm bowling. Majority of players are aware about the role of physiotherapy in improving the performance but have limited knowledge of advance rehabilitation protocols like advance thrower's ten exercises. Thus, we conclude that there is a strong need to design a strength training protocol addressing the shoulder performance based on fitness & strength parameters of the cricket players which would enhance player's performance and thereby improving their performance.

**ACKNOWLEDGEMENT**

We acknowledge the support of our parent institute Shree M. M. Shah Physiotherapy College, Mahemdavad for providing technical support and various sports academies around Ahmedabad and Mahemdavad, Gujarat, India for providing contact details of Cricket players. We heartfully thank all the study participants for sparing their valuable time for this survey and giving their responses.

**Source of Funding:** Nil

**Conflict of Interest:** The authors declare no conflict of interest

## REFERENCES


1. Sarthak Mondal, Anand Rampersad 2020 Routledge Handbook of Global Sport 1st edition.
2. McKinney J, Velghe J, Fee J, Isserow S, Drezner J. Defining Athletes and Exercisers. The American Journal of Cardiology. 2019;123(3):532-535.
3. Kinczel, A., Maklári, G., & Müller, A. (2020). Recreational Activities and Motivation Among Young People. Geosport for Society, 12(1), 53-65.
4. Rao, M. R., Srinivasan, T. M., & Itagi, R. K. (2020a). Epidemiology of annual musculoskeletal injuries among male cricket players in India. Indian Journal of Community Health, 32(3), 590–593.
5. Busse, J. W., Sadeghirad, B., Oparin, Y., Chen, E., Goshua, A., May, C., Hong, P. J., Agarwal, A., Chang, Y., Ross, S. A., Emary, P., Florez, I. D., Noor, S. T., Yao, W., Lok, A., Ali, S. H., Craigie, S., Couban, R., Morgan, R. L., … Guyatt, G. H. (2020). Management of Acute Pain From Non–Low Back, Musculoskeletal Injuries: A Systematic Review and Network Meta-analysis of Randomized Trials. Annals of Internal Medicine, 173(9), 730–738. https://doi.org/10.7326/M19-3601).
6. lomas shiva Persad musculoskeletal modelling of the shoulder during cricket bowling January 2016
7. Camargo p, alburquerque-sendín, f. Effects of stretching and strengthening exercises, with and without manual therapy, on scapular kinematics, function, and pain in individuals with shoulder impingement: a randomized controlled trial. Journal of orthopaedic & sports physical therapy. 2015;45(12):984-997
8. Wilk K, Meister K, Andrews J. Current Concepts in the Rehabilitation of the Overhead Throwing Athlete. The American Journal of Sports Medicine. 2002;30(1):136-151.
9. Wilk K, Yenchak A, Arrigo C, Andrews J. The Advanced Throwers Ten Exercise Program: A New Exercise Series for Enhanced Dynamic Shoulder Control in the Overhead Throwing Athlete. The Physician and Sportsmedicine. 2011;39(4):90-97
10. Pezzullo D. Functional Plyometric Exercises for the Throwing Athlete. Journal of Athletic Training. 1995;30(Number 1):22-26
11. Patel H, Ranganathan A, Arfath U. Efficacy Of Scapular Retractor Strength Training Vs Thrower's Ten Programme On Performance In Recreational Overhead Athletes - A Comparative Study. International Journal of Therapies and Rehabilitation Research. 2014;3(1):18.
12. Pope, D. P., Croft, P. R., Pritchard, C. M., Macfarlane, G. J., & Silman, A. J. (1996). The frequency of restricted range of movement in individuals with self-reported shoulder pain: Results from a population-based survey. British Journal of Rheumatology, 35, 1137–1141
13. Wilk K, Arrigo C, Hooks T, Andrews J. Rehabilitation of the Overhead Throwing Athlete: There Is More to It Than Just External Rotation/Internal Rotation Strengthening. PM&R. 2016;8(3S):S78-S90.)

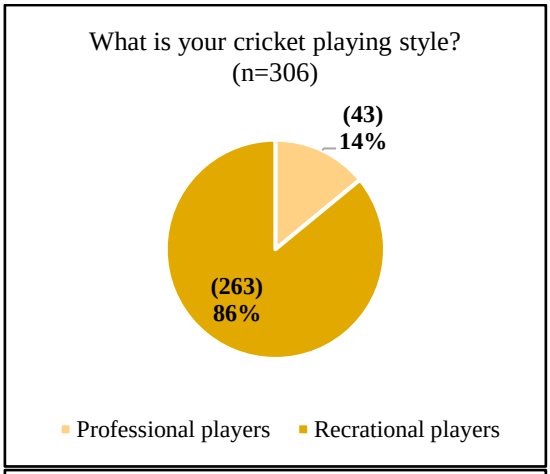


**Figure 4: Pie chart of Players Responses of Question 1.**

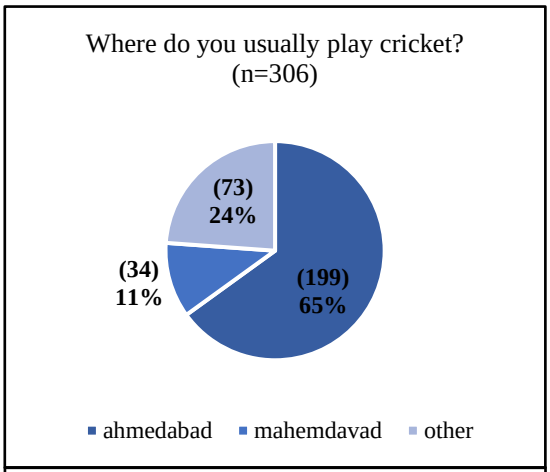


**Figure 5: Pie chart of Players Responses of Question 2.**

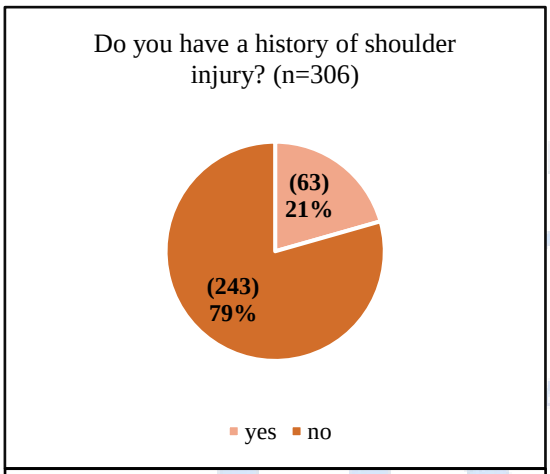


**Figure 6: Pie chart of Players Responses of Question 3.**

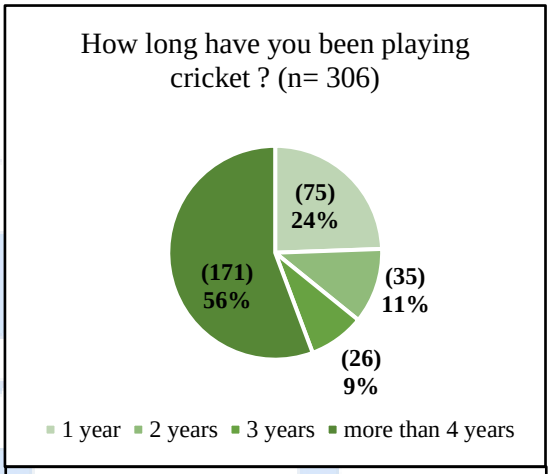


**Figure 7: Pie chart of Players Responses of Question 4.**

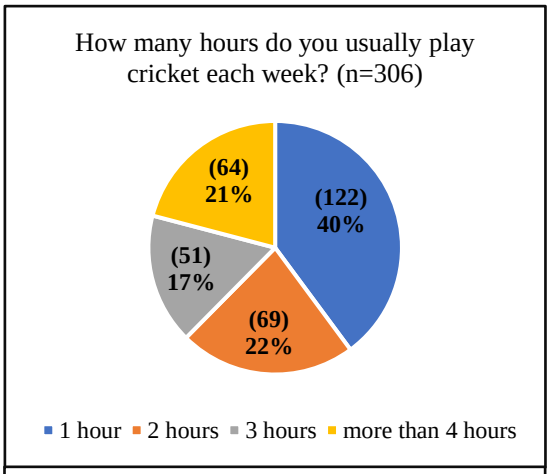


**Figure 8: Pie chart of Players Responses of Question 5.**

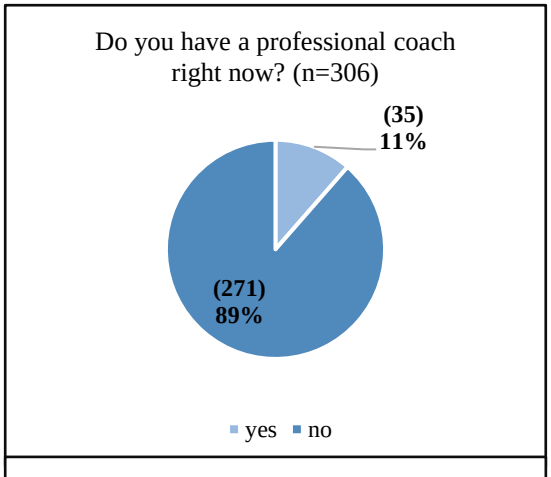


**Figure 9: Pie chart of Players Responses of Question 6.**

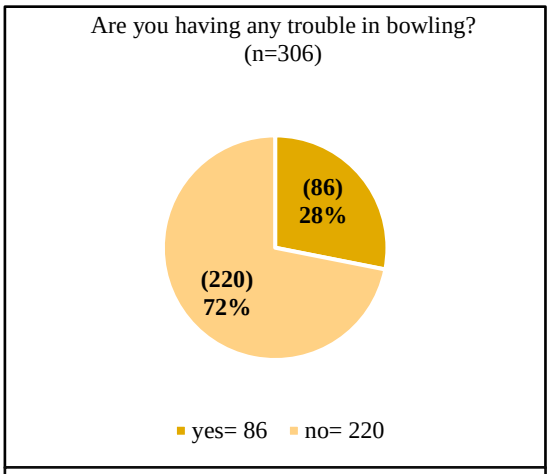


**Figure 10: Pie chart of Players Responses of Question 7.**

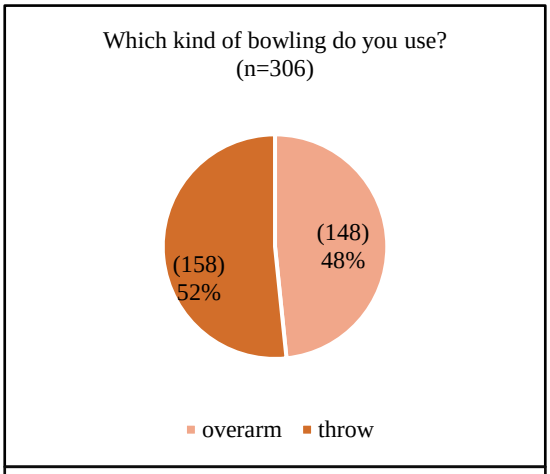


**Figure 11: Pie chart of Players Responses of Question 8.**

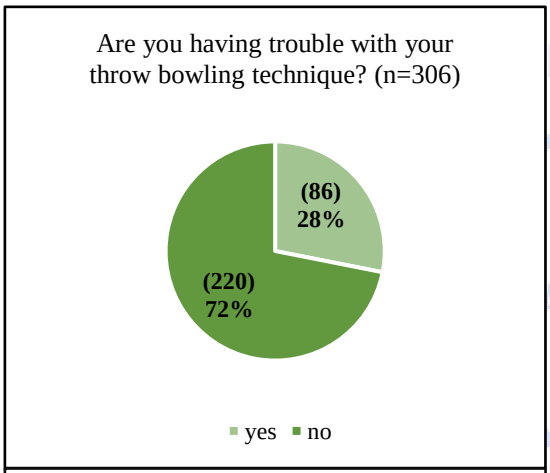


**Figure 12: Pie chart of Players Responses of Question 9.**

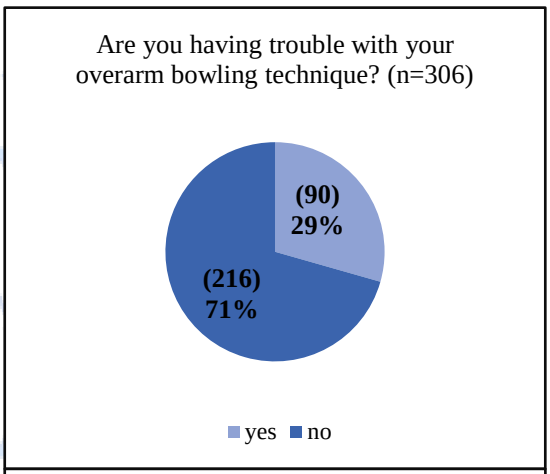


**Figure 13: Pie chart of Players Responses of Question 10.**

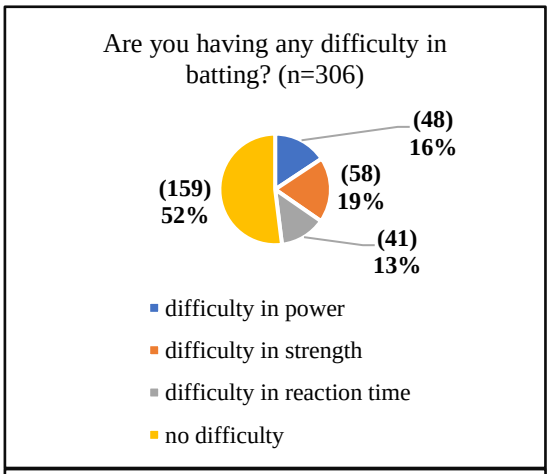


**Figure 14: Pie chart of Players Responses of Question 11.**

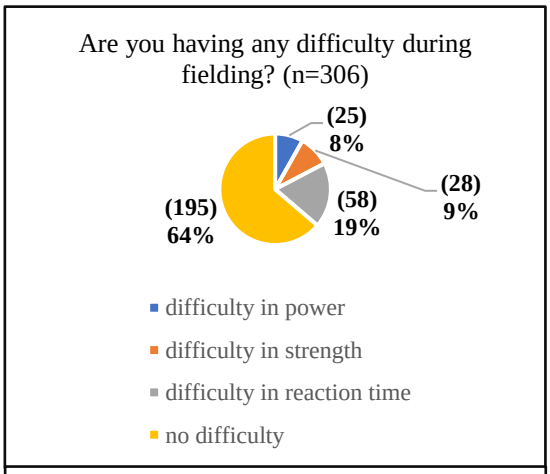


**Figure 15: Pie chart of Players Responses of Question 12.**

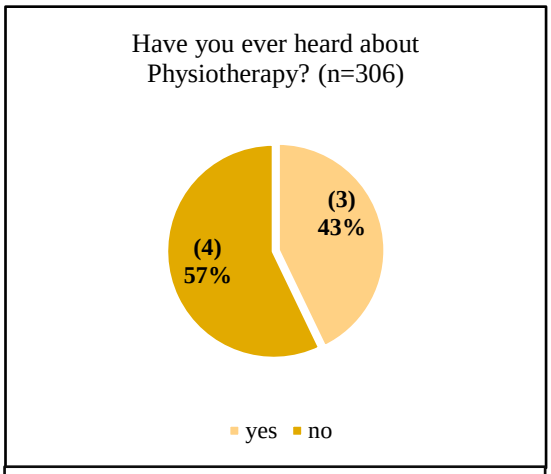


**Figure 16: Pie chart of Players Responses of Question 13.**

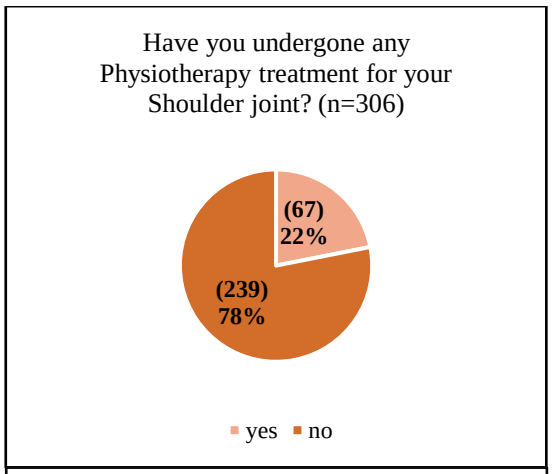


**Figure 17: Pie chart of Players Responses of Question 14.**

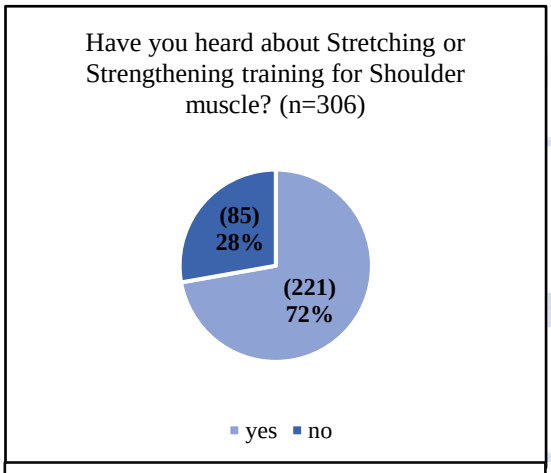


**Figure 18: Pie chart of Players Responses of Question 15.**

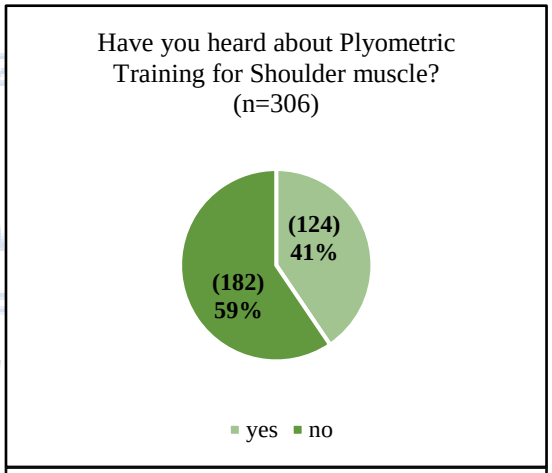


**Figure 19: Pie chart of Players Responses of Question 16.**

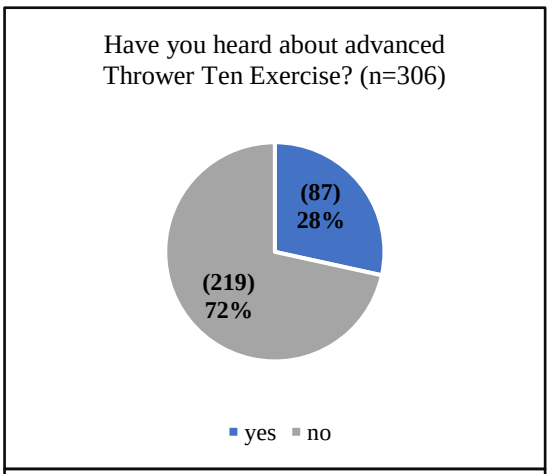


**Figure 20: Pie chart of Players Responses of Question 17.**

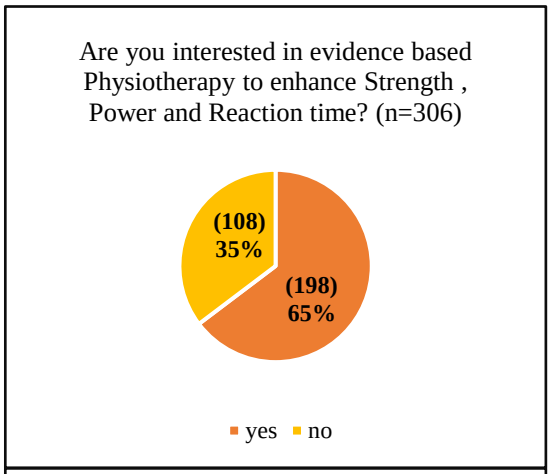


**Figure 21: Pie chart of Players Responses of Question 18.**