

Relationship Between the Competitive Behaviour and Shoulder Injuries in Professional Badminton Players

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DOI: <https://doi.org/10.52403/ijhsr.20240316>

ABSTRACT

Background: Competitive behaviour, is the willingness and desire to compete, with actions taken to either increase or decrease competition. It delves into the notion of competitiveness, as it drives individuals to achieve a specific goal and to outperform others pursuing the same objective. The drawbacks include the potential for serious injuries, high costs, time demands, stress, and the fostering of unhealthy rivalries. It also highlights the psychological toll that leads to diminished enthusiasm for the sport among participants. Badminton is a fast-paced game requiring exceptional fitness, strength, agility, speed, accuracy, and aerobic endurance. The sport involves complex racquet movements and high motor coordination with players frequently engaging in overhead strokes and rapid movements. Injuries of badminton players encompass both acute traumatic incidents and overuse injuries. The repetitive nature, such as overhead strokes, puts significant strain on the upper extremities, leading to conditions like tendinitis, periostitis, and shoulder pain. The injury rates during competitions compared to training sessions are very high. Rise of overuse injuries among young players, cautioning against the "no pain, no gain" mentality and advocating for proper injury management to prevent long-term consequences.

Aim: Relationship between the Competitive behaviour and shoulder injuries in badminton players

Methodology: The study was a qualitative data approach with an analytical study design. The target participants are professional badminton players. The survey was conducted in an offline environment using a meticulously crafted descriptive questionnaire. The study duration is of one year to comprehensively capture and analyse data. Convenient sampling technique was utilized, ultimately enrolling 49 professional badminton players as participants. The data collection procedure involved the administration of a self-designed questionnaire that was validated by subject experts and named "Competitive Behaviour in Professional Badminton Players Questionnaire." Participants received a questionnaire via an offline channel and after all responses were gathered, analysis was conducted.

Results And Discussion: The study reveals the intricate interplay between competitive behaviour and shoulder injuries in professional badminton players, emphasizing the multifaceted nature of athletic performance and injury risk. While competitive behaviour is integral to the sport's ethos, it can inadvertently predispose athletes to injury, particularly when combined with factors like fatigue and emotional intensity. Acute shoulder injuries are prevalent among players due to the physical strain of intense gameplay and repetitive overhead motions, exacerbated by psychological pressures to succeed. However, addressing injury risk in a competitive environment requires personalized approaches tailored to individual differences. Future research should explore targeted interventions, including biomechanical analysis and psychological resilience training, to optimize player performance and minimize injury risk in professional badminton.

Conclusion: In conclusion, this study sheds light on the complex relationship between competitive behaviour and shoulder injuries among professional badminton players. It underscores the need for proactive measures to prioritize player well-being and injury prevention within the sport. By emphasizing proper coaching, structured training programs, and psychological support, stakeholders can mitigate injury risk and promote long-term athlete health. Moving forward, targeted interventions and personalized approaches are essential to optimize player performance and ensure a safer and more sustainable future for athletes in the sport of badminton.

Keywords: professional badminton players, competitive behaviour, shoulder

INTRODUCTION

COMPETITIVE BEHAVIOUR -

The word "competitive" denotes a readiness and desire to compete. The acts and steps to build or reduce competition are referred to as competitive behavior. In general, competition is carried out to increase power, riches, or possibly personal gains. (1)

Cons of competitive sports –

Serious injuries may result. It can be dangerous and harmful to the competitor. It can be costly, time-consuming, stressful for players, and it can create unwelcome rivalries and enemies. It can also be psychologically draining and taxing, leading to a loss of enthusiasm for the sport. It can also be dangerous and detrimental to the competitor. (5)

Types of Injuries in Sports-

Sprains and strains of the muscles; Tears of the tendons that support and move the joints; Dislocated joints; Tears of the ligaments holding the joints together. Bone fractures, especially vertebral fractures. (6)

BADMINTON SPORTS-

Among racquet sports, badminton is thought to be the fastest due to its fast-paced nature. Playing competitive badminton requires exceptional fitness because the majority of shots are made overhead. In contrast, doubles demand constant aggression and is frequently played at a very quick tempo. Singles, on the other hand, calls for exceptional physical prowess and is a patient positional manoeuvring game. Athletes need to possess strength, agility, speed, accuracy, and aerobic endurance. It's a technical sport as well, requiring the

development of complex racquet movements and high motor coordination (6)

Injuries occurs in badminton players-

In India, badminton is a well-liked competitive and leisure activity that dates back to British colonization in the nineteenth century. The quickest of the racquet sports, badminton is a fast-paced activity. Competitive badminton, which is played with primarily overhead strokes, calls for exceptional dexterity. Singles calls for exceptional physical prowess and is a methodical positional maneuvering game, but doubles call for constant, all-out aggressiveness and is frequently played at a breakneck tempo. Athletic endurance, agility, strength, speed, and precision are necessary for players. Another technical aspect of the sport is the development of complex racquet movements and high motor coordination. Although extensive scientific research on badminton mechanics has not been conducted, studies have identified the mechanisms of power generation, particularly in jump smashes, and have evaluated the efficacy of various lunge techniques, which are essential for success in repetitive shuttlecock retrieval. Despite the fact that badminton is not a contact sport, injuries are still frequent. They include both acute traumatic incidents and overuse injuries. The game is physically demanding, requiring players to perform difficult actions with frequent posture changes such lunges, reaches, retrievals, and hops. Moreover, the upper extremity is subjected to extreme stress due to repetitive overhead forehand and backhand strokes that are used in conjunction with deception and very quick hitting actions. Thus,

overuse injuries to the upper limb, axial skeleton, and lower limb are common in competitive athletes. Short bursts of movement with abrupt, quick direction changes are also required in badminton, as well as diving to retrieve the shuttlecock. Players are at danger of suffering non-contact traumatic injuries to their joints and muscle-tendon units as a result. Occasionally, contact injuries like concussion and ocular trauma can result from collisions between doubles players or their racquets.(6)

Biomechanics and Injury Patterns-

A biomechanically demanding sport is badminton. The physical work is intermittent, alternating bursts of high-intensity exertion with brief rest intervals. The upper extremities, particularly the shoulder, is repeatedly stressed by the repetitive motion of overhead strokes and short hitting action. In their three-dimensional examination of badminton strokes, Sakurai et al. demonstrated the significance of radio-ulnar pronation, elbow extension, and wrist ulnar deviation. Badminton strokes are made with forearm rotation. It has been demonstrated that 53% of the shuttle velocity in a badminton smash is contributed by shoulder rotation and radio-ulnar pronation. According to a study on the biomechanics of the forehand and backhand strokes, skilled players significantly increased the angular velocities of the glenohumeral external rotation, forearm supination, and wrist extension in the backhand stroke compared to less skilled

players, but not in the forehand stroke. Badminton provides a significant degree of load on the shoulder joint, and a defining element of this sport is that it requires increased range of shoulder mobility. An effective smash requires the internal rotation of the arm. The stroke kinetic chain also has a significant role for forearm supination and pronation (6)

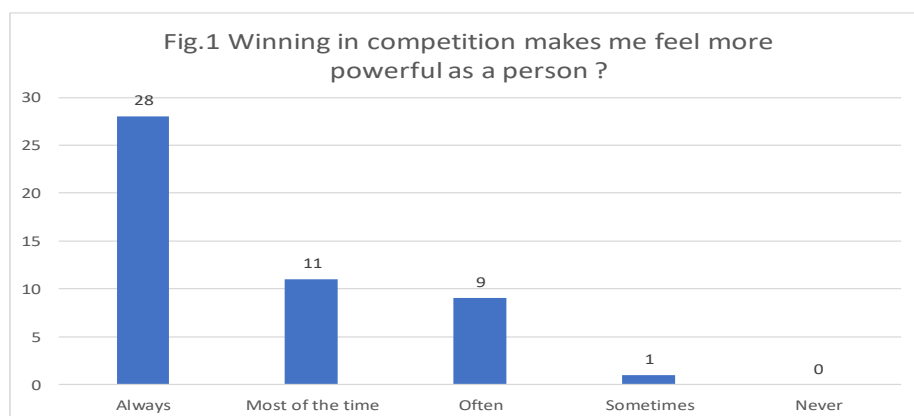
MATERIALS & METHODS

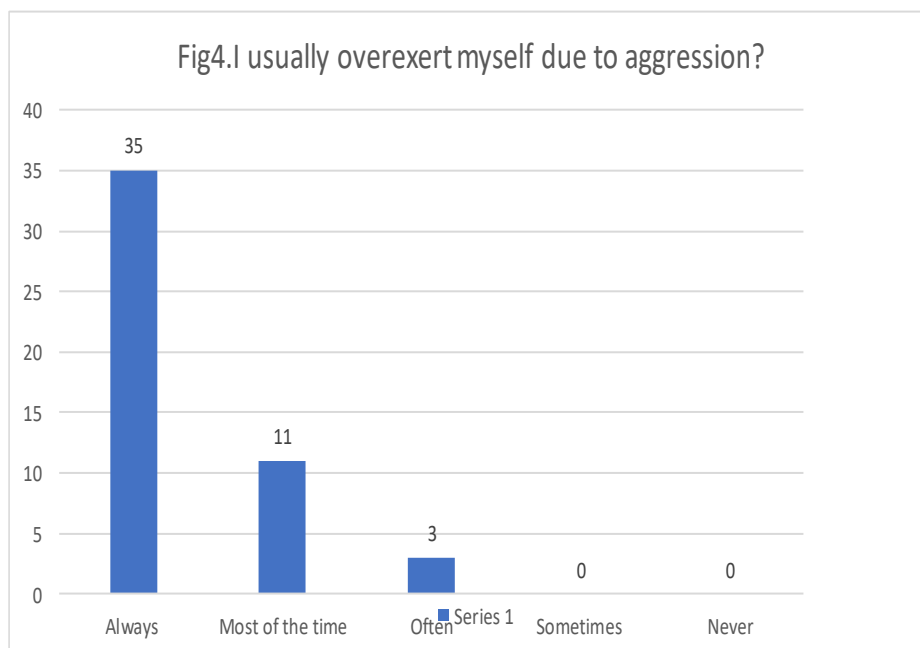
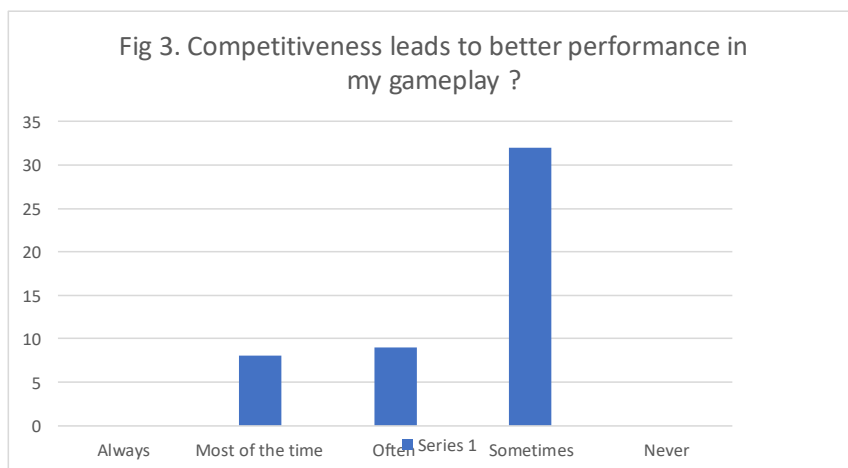
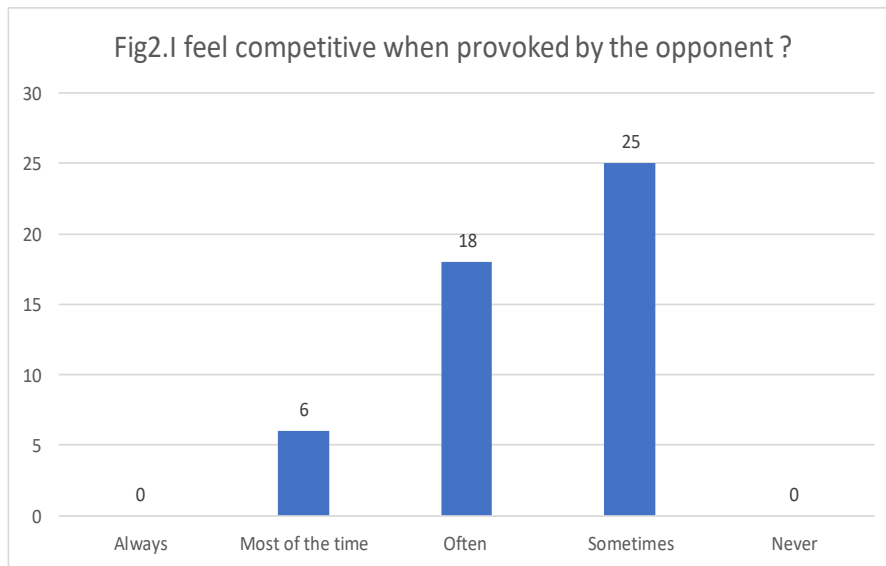
A descriptive cross-sectional study was conducted via a self-designed questionnaire at Nashik Gym-Khana. Qualitative data was collected from professional badminton players. Sample size considered for study was 49 which was calculated using Rao software. A self-designed questionnaire “Competitive Behaviour In Professional Badminton Players Questionnaire” (933/2024CO-/L) consisting 15 questions was designed. The questionnaire was validated by subject experts in field.

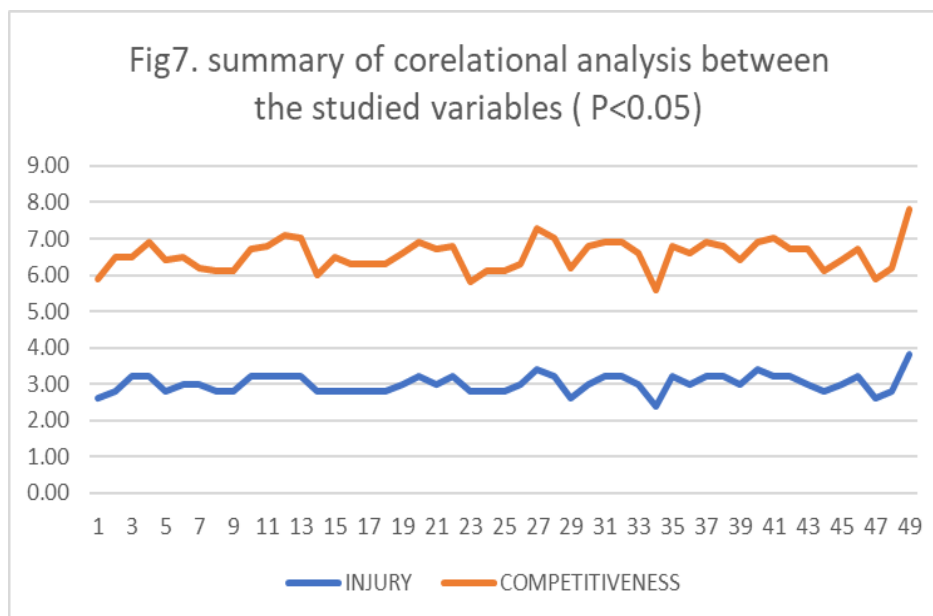
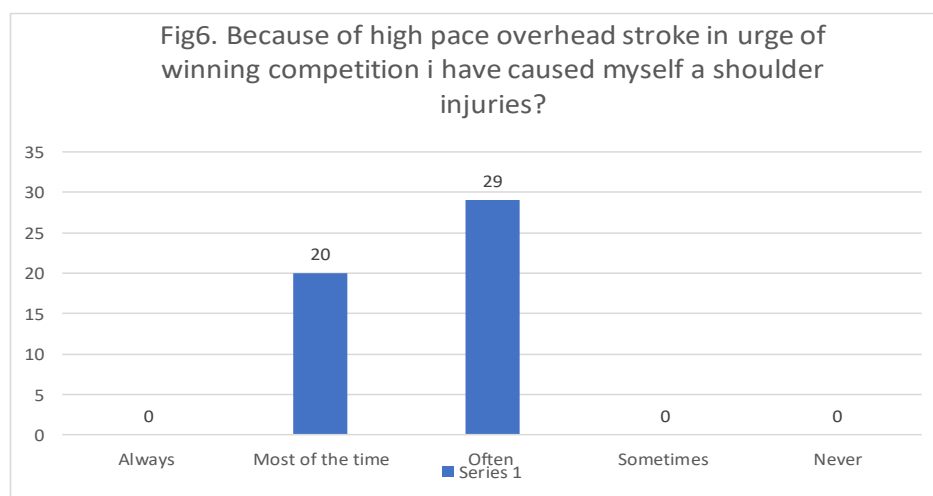
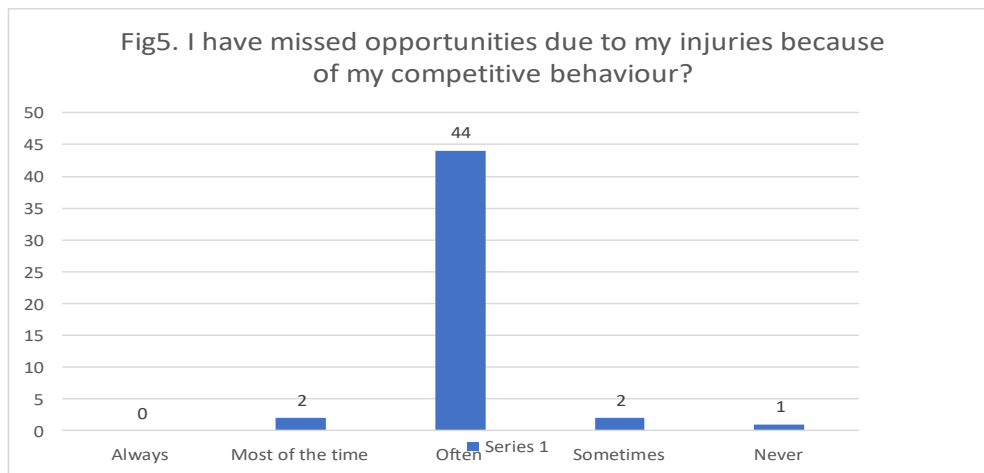
After Ethical approval from Institutional ethical committee, samples were collected by simple random sampling. Study included professional badminton players willing to give consent for participation within 15 to 25 age group. Both male and female players who faced shoulder injuries during matches were included. Players having pathology related to shoulder were excluded

STATISTICAL ANALYSIS

Statistical Analysis was done using IBM SPSS version 25 for windows software. Pearson correlation test was also done. Level of significance was set at $P < 0.05$







RESULT

A sample size of 60 was taken among which 49 were professional badminton players

It was observed that 54% had competitive behaviour

Questions	Responses				
	1	2	3	4	5
Q1	0%	2%	18%	23%	57%
Q2	0%	51%	37%	12%	0%
Q3	57%	41%	2%	0%	0%
Q4	0%	0%	0%	20%	80%
Q5	2%	78%	20%	0%	0%
Q6	0%	65%	19%	16%	0%
Q7	0%	0%	0%	4%	96%
Q8	0%	0%	0%	37%	63%
Q9	0%	0%	6%	23%	71%
Q10	8%	8%	45%	39%	0%
Q11	0%	2%	37%	49%	12%
Q12	0%	2%	4%	90%	4%
Q13	0%	0%	59%	41%	0%
Q14	0%	0%	82%	18%	0%
Q15	31%	65%	4%	0%	0%

INTERPRETATION-

1. NEVER
2. SOMETIMES
3. OFTEN
4. MOST OF THE TIME
5. ALWAYS

DISCUSSION

The study focuses on the intricate relationship between competitive behaviour and shoulder injuries among professional badminton players, offering insights into the multifaceted nature of athletic performance and injury risk. A sample size of 60 participants was analysed, with the majority being professional badminton players (49 out of 60). Notably, 54% of the participants exhibited competitive behaviour, underscoring its prevalence within the competitive landscape of badminton.

The findings of this study align with existing literature on sports-related injuries and competitive behaviour. Rubin (1999) discusses the basics of competitive diving and its associated injuries, highlighting the physical demands and injury risks inherent in competitive sports. Similarly, Pardiwala et al. (2020) review badminton injuries in elite athletes, emphasizing the importance of understanding injury epidemiology and biomechanics in injury prevention strategies. In their study they have mentioned and observed that there was no difference between professional and amateur players in terms of injury. Their

analysis also stated that 92% of the players continued to play with the injury. Pardiwala et al concluded that for professional players the occurrence of injury was usually during the training sessions and while for amateurs was in the competitive household with the probability of increased occurrence of injury during competitions. The observed correlation between competitive behaviour and shoulder injuries among badminton players resonates with these studies, suggesting a common pattern across different sports disciplines. (6)

Analysing specific behaviours related to competitiveness provides further insights into injury risk factors. For instance, 80% of respondents reported experiencing increased fatigue due to competitive behaviour against opponents, corroborating Sinnema et al.'s (1990) findings on the clinical aspects of competitive sports in children. The study by Sinnema et al. emphasizes the physical and psychological toll of competitive sports, highlighting the potential consequences of overexertion and fatigue on athlete well-being. In the context of badminton, the heightened fatigue resulting from competitive play may exacerbate the risk of shoulder injuries, particularly during intense matches.(7)

Moreover, psychological factors play a significant role in shaping competitive behaviour and injury outcomes. The study reveals that 96% of participants feel down when losing in athletic competition, echoing the psychological impact of competition loss discussed by Ives et al. (2020). Ives et al. explore the effects of competitive orientation on performance, emphasizing the psychological dimensions of competitiveness and their implications for athlete behaviour and well-being. In badminton, the emotional intensity associated with competition loss may contribute to stress and anxiety, potentially influencing player performance and injury susceptibility.(3)

The study done by Tranaeus et al stated that various connections between psychosocial stress and athletic injuries are proposed in

the Biopsychosocial Model of Stress, Athletic Injury and Health (BMSAIH). More precisely, it is hypothesised that psychophysiological stressors (such as traumatic life events, physical training, etc.) affect the autonomic nervous system, which in turn affects recovery and behavioural mechanisms (such as poor sleep and self-care). The subsequent stage could see an increase in the risk for overuse injuries due to the modifications in recovery and behavioural processes. They also suggest that some of the intra-personal factors such as competitiveness and motivation, exercise dependence, athletic identity, perceived stress from sport and life, type A behaviour, risk-taking and perfectionism, coping skills, attentional focus, locus of control, gender typing, metacognitive skills of self-regulation, body consciousness and hyperactivity, and personality traits were one of the major reasons for overuse injury. It was stated that athletes are more likely to have overuse injuries when they have specific goals that align with competition dates. One qualitative study found that athletes who had suffered an overuse injury had a strong sense of identity related to their sport. Three distinct studies have indicated that players' passion and attention to their activity are risk variables that predispose them to overuse injuries. Training until physically or psychologically exhausted, as well as training excessively, were identified as practices that raise the risk of overuse injuries.(8)

The distinction between acute and chronic injuries further underscores the complexity of injury occurrence in badminton. While acute injuries may result from specific instances of intense gameplay, chronic injuries often stem from cumulative stress and overuse. This distinction resonates with the findings of Ablison (2023), who discusses the key pros and cons of competitive sports. Ablison highlights the potential risks of overexertion and injury associated with competitive sports, underscoring the importance of balancing competitiveness with player safety and well-

being. In badminton, chronic shoulder injuries may develop over time due to repetitive overhead motions and biomechanical inefficiencies, emphasizing the need for comprehensive injury prevention strategies.(5) However, addressing injury risk in a competitive sporting environment requires personalized approaches tailored to individual differences. Future research endeavours should explore the efficacy of targeted interventions, such as biomechanical analysis, injury risk profiling, and psychological resilience training, in mitigating injury risk and optimizing player performance in badminton. By integrating insights from multidisciplinary research and collaborative efforts, the badminton community can pave the way for a safer and more sustainable future for athletes at all levels of the sport.

CONCLUSION

In conclusion, the findings of this study underscore the critical importance of understanding the interplay between competitive behaviour and shoulder injuries in professional badminton players. By adopting a holistic approach to injury prevention and player well-being, stakeholders can safeguard the health and longevity of athletes, thereby ensuring sustained participation and success in the sport. Through collaborative efforts aimed at fostering a culture of balanced competitiveness and prioritizing player welfare, the badminton community can pave the way for a safer and more sustainable future for athletes at all levels of the sport

Declaration by Authors

Ethical Approval: Approved (Dr, APJAKCOPT/BPT/UG/2023/30)

Acknowledgement: I acknowledge all the participants, my Guide Dr. Tejas Borkar (head of the pediatric department) and to all my colleagues.

Source of Funding: None

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

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How to cite this article: Amisha Jamadar, Tejas Borkar. Relationship between the competitive behaviour and shoulder injuries in professional badminton players. *Int J Health Sci Res*. 2024; 14(3):92-99. DOI: [10.52403/ijhsr.20240316](https://doi.org/10.52403/ijhsr.20240316)
