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INJURIES IN INDIAN SQUASH PLAYERS: AN INVESTIGATION

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ABSTRACT

Background

Squash is a fast paced, all weather, racquet sport gaining rapid popularity in India. The nature of squash lends itself to contact and non-contact musculoskeletal injuries. There is no data on squash injuries amongst Indian players. **Objectives** To examine the demographics, distribution and recovery times of various injuries sustained by squash players in India. **Study Design** Descriptive epidemiology study **Materials and methods** A survey was conducted to collect information regarding demographics, distribution and types of injuries and recovery times. **Results** A total of 120 valid responses were received and analysed. 86% of the respondents had an injury requiring more than 2 weeks for recovery. The average age of respondents was 41 yrs. There was preponderance of lower limb injuries with the knee being affected the most. The mean age at time of sustaining injury was 34 yrs. The knee injuries took the longest to recover and muscle strains the shortest. The average time to recover was 5.8 months. **Discussion** This is the first study to investigate injuries in Indian squash players. It has revealed that lower limb injures are far more common in Indian players as compared to studies from other nations. The knee injuries form the bulk of injuries and take the longest time to recover. The contact injuries are very few. **Conclusion** Squash players from Indian clubs have suffered knee injury more than any other injury. Further studies are required for understanding injury mechanisms and formulating injury prevention protocols. **What is known about the subject?** Similar descriptive epidemiologic studies have been conducted on squash players from North America, UK, South Africa, Iran, and Malaysia. The literature is relatively sparse given the growing nature of this sport. **What this study adds to existing knowledge:** This is the first of its kind that we are aware of that examines squash players from India. This study provides an insight into injuries suffered by Indian club level squash players. This study contrasts the difference in types of injuries sustained by Indian squash players.

Introduction:

The sport of squash is a demanding sport. Squash ranks highest in terms of MET (Metabolic equivalents) ranking of various sports(Jetté M,et al 1990). It is played in a court of size 62.4m2 (Length of court is 9.75m, width of court is 6.4m, diagonal is 11.665m). The rules of the game allow use of the walls and the floor which results in an immense amount of ricochet and variation in velocity of the ball in play. These factors contribute to the acceleration, deceleration, and rotational stress on the players' body. Squash provides wholesome activity with recreation in a short duration of time. Given its all-weather nature and limited space requirements, more apartments are including squash in their designs. The popularity of squash has increased across all ages. All these advantages are to be balanced by the injuries sustained while playing squash. There has been no study on epidemiology of these injuries in Indian players. This study investigates the demographics, injury patterns and recovery times of the various injuries sustained while playing the sport.

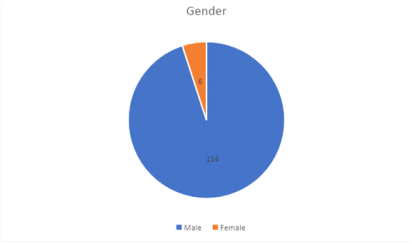
Methods and materials

This is a retrospective descriptive study. The squash players of various clubs in India were contacted and requested to participate in a survey of injuries sustained while playing squash. The survey sought information of basic demographics such as age, gender, playing hand along with brief description of injury sustained. Many players had sustained multiple injuries; for the survey, information was sought on the most severe injury. The respondents were asked to respond even if they had never sustained any injury. An injury was considered significant if it had kept the player away from playing squash for more than 2 weeks.

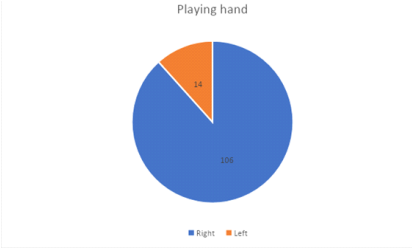
The survey questionnaire was performed using a web form on Google Suite. The players were contacted by email, telephone, social media groups and personal connections. The data was analyzed using Microsoft Excel.

Results

A total of 134 responses were received. 11 responses were duplicate responses and 3 responses were incomplete; these were excluded from the study. The study was done on the remaining 120 responses. The demographic distribution was as follows:



Total 120 –Male: 114 (95%), Female: 06 (5%)



14 were left-handed (11.66%) and 106 right-handed (88.43%)
16 respondents (14.17%) had no injuries, of which 4 were left-handed (28.5%)
5 of the 6 females had sustained an injury.

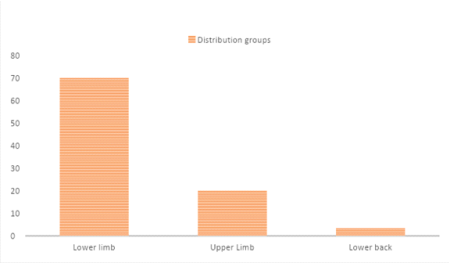
The mean age of players is shown in Table 1.

Table 1: Age of participants

	Number of players	Mean in years (Std. Dev.)	Median Age
Male	114	41 (13.2)	42
Female	6	46 (17.69)	48
All	120	41 (13.41)	42

There were 67 respondents above the age of 40 and 53 were 40 or below.

Only two injuries (of the 104) were due to an on-court contact event - one eye injury, and one toe fracture. The rest 98.07% of injuries were non-contact and of muscle/tendon/ligament.



There were 70(67.3%) lower limb injuries, 20 (19.23%) upper limb, 13(31.73%) lower back and one eye injury.

Details on the distribution of all injuries is provided in Table 2 below.

Table 2: The distribution of all injuries

Injury	Number (percentage)
Knee	25 (21)
Lower back	13 (11)
Elbow	12 (10)
Ankle	10 (8.3)
Hamstring strain	6 (5)
Groin Strain	6 (5)
Achilles Injury	5 (4,1)
Heel pain	5 4.1)
Quadriceps strain and tear	4 (3.3)
Wrist pain	3 (2.5)
Shoulder pain	3 (2.5)
Calf muscle tear	3 (2.5)
Forearm muscle strain and tear	2 (1.7)
Hip pain	2 (1.7)
Bunion	1 (0.83)
Fracture toe	1 (0.83)
Eye injury	1 (0.83)
Gastrocnemius strain	1 (0.83)
Shin splints	1 (0.83)
No Injury	16 (114)

The four most common injuries were further analyzed

Injury	Number (Percentage)
Knee	
Anterior Cruciate ligament tear	6 (30)
Medial Meniscus injury	3 (15)
Chronic pain	11 (55)
Lower back	
Muscular Strain	7 (54)
Intervertebral disc prolapse	4 (31)
Posterior capsular rupture	2 (15)
Elbow	
Tennis elbow	10 (83)
Golfers' elbow	2 (17)
Ankle	
Sprain	6 (60)
Ligament tear	4 (40)

The age at the time of injury and the average time to heal was also determined. The details are provided in Table 3 and Table 4.

Table 3: Average age at injury

Type of injury	Average age (years)	Range (min-max years)
All injuries	34.6	12-69
Knee combined ACL Meniscal injury Others	34.5 33 36 34.5	12-50 26-45 30-48 12-50
Low back ache	32.65	14-46
Elbow combined Tennis elbow Golfers elbow	37 37.7 35.3	12-69 12-69 29-50
Ankle injuries Ligament tears Sprains	33.6 29.5 36.33	15-47 15-37 18-47

Table 4: Injury recovery time: descriptive statistics

Type of injury	Number	Average time to recovery (months)	Range (months)
All injuries	104	5.8	0.5 - 60
Knee combined ACL Meniscal injury Others	25 06 03 16	9.25 6.0 7.6	1.5 - 24 6 - 6 0.5 - 36
Low back ache	13	7.14	14 - 24
Elbow combined Tennis elbow Golfers elbow	12 10 02	7.35 2.0	0.5 - 24 0.5 - 3
Ankle injuries Ligament tears Sprains	10 04 06	5.0 2.83	1.5 - 12 1.5 - 6

Discussion

This is the first study which has explored injuries amongst Indian squash players. The game of squash was introduced in India by British Army officers. It has an entry barrier in the form of accessibility and affordability. Due to its fast pace and all-weather nature it is attracting more people to its fold. The newer apartment complexes are increasingly making provision of squash courts in their premises.

The nature of the squash game lends itself to both contact injuries and life altering musculoskeletal injuries. This study is to gauge the nature, distribution, and recovery times of these injuries. Almost 86% of the respondent's had sustained an injury requiring medical attention and keeping them away from squash for more than two weeks.

The major aspect in this study is the preponderance of lower limb injuries especially knee joint injuries(Refer to Table 2). This contrasts

studies from the United States of America (Berson BL, et al 1978), (Berson BL, et al 1981),(Nhan DT,et al 2018) and Britain(Chard MD & Lachmann SM, 1987) where the injuries were more evenly distributed between upper and lower limbs. The studies from Iran(Okhovatian F, Ezatolahi A, 2009) and South Africa(Meyer L,et al 2009) point to injuries of lower back and thighs respectively. The demographic distribution of these studies is also towards a younger population. A study from Malaysia had a vastly different pattern where the upper limb injuries were more than lower limb injuries, maximum being wrist involvement followed by shoulder(Sankaravel M et al 2018).

The average age of participants in the study was 41 years(Table 1) and average age at the time of sustaining injury was 34 years(Table 3), the average age at the time of sustaining injury was almost the same for all injuries. The reasons for the injuries could be multiple. Poor technique or inadequate physical conditioning rather than degenerative issues of tendons and joints are more likely reasons – which will need to be tested. Interestingly there are only two (out of 104) contact injuries in this study. One eye injury and another fracture of toe. The small number of contact injuries in this study may be attributed to higher age of the participants which implies players exercising greater caution while playing and avoiding hard contact.

In our study the maximum injuries are of the knee joint(Table 2). The motion and technique of retrieval of drop shots from the front of court and movement back to the centre of the court, puts a severe stress on knees and lower back. This is especially stressful in a slightly older population like the cohort of this study. The comparison of injury patterns of squash and badminton reveal that the shoulder is the most common area injured in badminton as compared to knees in squash(Muttalib A, Zaidi M, Khoo C, 2009).

The recovery and healing survey revealed that the longest healing time was for Knee injuries - more than 7 months of average recovery time(of these injuries anterior cruciate ligament injuries had the longest recovery time) and shortest was for muscular strains with an average recovery time being 2.5 months(Table 4). Rest and time off from squash is important for healing of injuries. The most difficult part of treatment is to get the avid player to refrain from playing the game during recovery. The inability to give complete rest to the injured part causes low grade recurrent injuries and leads to chronicity and prolonged recovery times. There is a need for further studies into the dynamics of musculoskeletal movements in squash to understand the mechanism of injuries. We also intend to study the effect and association of cardiovascular and resistance training along with training in technique on occurrence and recovery from injuries.

Conclusion

This observational epidemiological study of injuries sustained by club level squash players in India reveals an interesting insight in contrast to similar studies in other parts of the world. The injuries of the lower limb far outnumber other injuries and the knee is the most injured part reported. This distribution is different from epidemiological studies of other nations where arm, shoulder and back injuries dominate. The average age of the players in the sample is 41 years and age at time of sustaining injury was 34 years. The time to heal was maximum for Knee injuries and least for muscular strains. This study is the first of its kind for Indian squash players. It establishes a baseline and will help us develop new hypotheses to understand the common causes of injuries and possible measures club players can take for injury prevention.

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