KNEE INJURIES IN BADMINTON SPORT: INVESTIGATING CIRCUMSTANCES OF INJURY AND MANAGEMENT TECHNIQUES IN SINDH PROVINCE

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Abstract

Knee injury is one of the most common types of injuries that sportspeople experience in Badminton sport. Extant literature on knee injuries suggests that most of the research undertaken was in advanced countries. Especially, very limited research has been undertaken in context of Sindh province. Consequently, this study aims to report survey findings of the cases of knee injuries in Badminton sport and its management techniques across thirteen districts of Sindh. Data were collected through structured interview using survey questionnaire by non-probability technique of convenience sampling. Data were analyzed in SPSS version 22.0. Mean age of the Badminton players across Sindh was about 34 years and about 42.3% have had graduation. These findings reveal that middle-aged and educated people play this game for fitness purpose. Findings also reveal that about 53.8% players got their right knee injured during the play. It was stated that 92.3% respondents were injured intrinsically. While X-ray was the only technique used to diagnose the injury. However, 80% respondents were suggested to go through some physiotherapeutic methods as management of the injury.

Keywords: Knee Injury, Badminton, Diagnosis, Management, Sindh province

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Introduction

Regular participation in sports activities and physical exercise is highly encouraged to maintain positive physical, mental and social health and improve quality of life by reducing risk of chronic disease such as cardiovascular disease (CVD), diabetes, obesity, and depression. Today, governments, corporations, NGOs and international funding organisations encourage wider public participation in sports and recreational activities for all age groups for the substantial public health benefits. In developed countries, huge budget is allocated to build public parks, stadiums and lead public awareness campaigns. However, regular participation in sport can sometime have a detrimental effect on health in the form of injury. There is increasing body of empirical research showing the cases of knee injuries while performing sports especially Badminton (Bunker &Apthorp, 1995; Hawkins & Fuller, 1999).

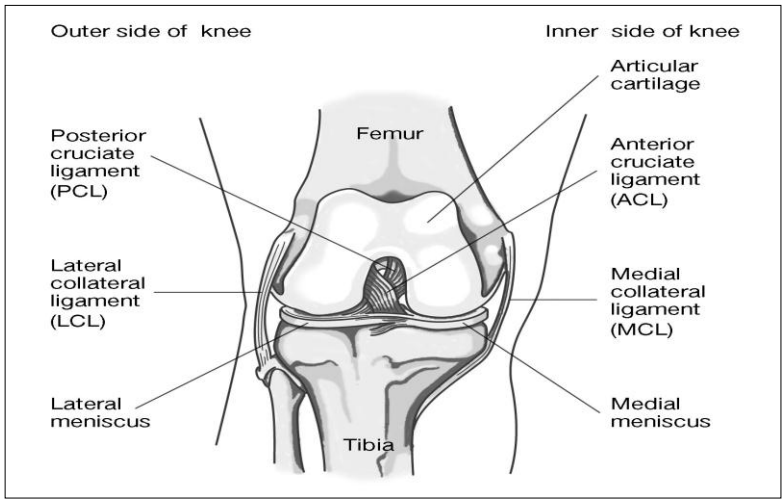
Badminton was invented in England during 1873. It was referred to as "The Game of Badminton," and, thereupon, Badminton became its official name. It is played by either two or four players along both sides of net using, lightweight rackets, and a shuttlecock, a cork ball fitted with stabilizing feathers. Typically, it has been played either indoors or outdoors, on a marked-out area 44ft (13.41 m) long by 17ft (5.18 m) wide for the two-player game and 20ft (6.10 m) wide for the four-player game. Badminton was introduced in the Olympics Games in 1992 Barcelona.

Literature review

According to Bunker &Apthorp (1995) and Castelyn (1999) acute knee injuries have been in sports including Badminton are very common. The effects of knee injuries could be minor or serious affecting the overall health. Legs are considered fundamental organs of the human body which profoundly contribute to performance, bear the weight of whole body and let individual move and do physical activity. The anatomy of knee joint has six degrees of freedom, three rotational and three translational (Greenfield, 1993). It is a complex joint that provides both stability, to allow weight bearing, and mobility. Knee movements are possible in amalgamation of rolling and gliding (Greenfield, 1993; Palastanga & Soames, 1994).Activities such as running and cutting the knee is

flexed, which means that the tibial plateau is almost parallel with the weight-bearing surface (Dye &Vaupel, 2000).

Figure 1 Anatomy of the knee: Anterior view



According to Greenfield (1993) the anatomy of knee joint pictured in figure 1 indicates 6^0 degree of freedom with 3 rotational and 3 translational which makes it a complex joint that provides both stability allowing weight bearing and mobility. Furthermore, the ligaments, capsule, and the muscolutendinous soft tissue grip the knee interact with complex gliding and rolling movements in the joint to keep functional stability stable. There are a lot of anatomical structures inside the joint that can be abused by the external trauma or overuse activity (figure 1). Knee joint comprises of strong bones, ligaments and thicker cartilages in the human body. It also consists of one huge tendon as well as smaller ones and full component of burse that can develop bursitis at any time during the injury. The highest numbers of knee injuries have to do with extensor mechanism Quick Recovery from Injury (Garick&Raletasky, 2000).

Research context and objective of the study

Badminton in Pakistan has not been popularly played like cricket.

However, it is popular in urban centres of Sindh province. It has been observed that people like to play Badminton for keeping fit and for leisure. Players have limited facility of playground, lighting, coaching and healthcare facilities. Consequently, there are larger chances players may get injured and knee is most important part of the body to get affected. A detailed analysis of the circumstances and management of knee-injuries in sports is urgently required in Sindh province. Such effort will invoke academic and research debates on one hand and provide policy recommendations for all stakeholders e.g. government officials, coaches, trainers, sportspersons, healthcare professionals and audience as well.

Research Method

Data were collected through structured interviews using survey questionnaire comprising three sections such as (I) demographic characteristics, on injury and period of recovery, (II) sports injury circumstances and environment and (III) injury management (first-aid), rehabilitation and comeback. Convenience sampling technique was applied to gather data from Badminton players all across Sindh. The survey also investigated wide variety of demographic questions, including gender, age, education, height, weigh

Results

Demographic information*:* The average age of the respondents was found to be 34 years. Average height and weight were recorded as 68.15 inches and 77.85 kilograms respectively. About 65.9% participants had graduation. The higher educated percentage of players indicates that the game was mostly played by the educated persons. It was reported that mostly the players were injured in the evening time at about 7:00 pm because this game is generally played in the evening time.

Circumstances of knee injury*:* Table 1 reveals that 53.8 percent players' right leg was injured during the play while 46.2 percent reported left. Indoor playgrounds were preferred by most of the respondents (96.2%) whereas only 3.8 percent respondents preferred outdoor ground. Majority of the playgrounds (73.1 %) were having wooden floor while only 27 percent of those having cemented floor in artificial light as Badminton usually being played after sunset.

Further, it was also revealed from the data that nearly 39 percent of the players injured during hot season while 61 percent in cold climate.

Table 1: Type of playground, floor and knee injury

Injury in Knee	**Frequency**	**Valid Percent**
Right	14	53.8
Left	12	46.2
Playground		
Indoor	25	96.2
Outdoor	1	3.8
Type of Floor		
Wooden	19	73.1
Cemented	7	26.9
Total	26	100

Severity of Injury and complaint*:* Table 2 presents findings relating to knee injury management. It was reported that majority of the players (92.3%) injured intrinsically while only 7.7 percent players injured extrinsically while majority (42.3%) of the players got moderate injury followed by mild (38.5%). Only 19.2 percent of players were injured severely and very small number of players shown complaint instantly for medical help.

Table 2: Severity of knee injury

	Frequency	**Valid Percent**
Intrinsic	24	92.3
Extrinsic	2	7.7
Severity of Injury		
Mild	10	38.5
Moderate	11	42.3
Complain after Injury		
Instant	7	26.9
Delay	19	73.1
Total	**26**	**100**

***Medical Assistance and tests**:* Table 3 shows results regarding various medical tests, which were conducted during the treatment of the injury. Table indicates that only X-ray technique was used in diagnose of the injury and over 50 percent players even did not opt for any medical tests for injury diagnosis. No one use the modern technology such as MRI, ultrasound, Athrogram and Arthroscopy for diagnose purpose. These findings indicate that vast majority of the injured players relied on quack rather than orthopedic consultants and not hospitalized for treatment.

Table 3: Medical Tests

	Frequency	**Valid Percent**
X-Rays	11	42.31
Ultrasound	0	0.00
Athrogram	0	0.00
Arthroscopy	0	0.00
MRI	0	0.00
None of the tests taken	15	57.69
Total	**26**	**100**

***Physiotherapy**:* Table 4 presents findings about physiotherapy given to the injured players. Results reveal majority of the respondents (53.86%) were treated with manual physiotherapy and 19.2 percent players responded that they availed instrumental facility and very limited number of players were provided both manual and instrumental physiotherapy as their percentages was reported as (3.84%).

Table 4: Type of physiotherapy

	Frequency	**Valid Percent**
Manual	14	53.86
Instrumental	5	19.23
Both	1	3.84
NA	6	23.07
Total	**26**	**100**

Facility in the Area*:* Respondents were also asked about the facilities for playing Badminton at the playground. Majority of players (70 %) responded that they played with no facility of proper floor, coaching or medical assistance. Badminton players were also enquired about what facilities they require. All the respondents express that they need Badminton halls and clubs to play, coach to guide, exercise instruments, funds to manage playing material with some medical assistance.

Discussion andConclusions

This study focused on identifying causes of knee injuries to Badminton players and management techniques being applied. Data were collected from various district headquarters of such as Karachi, Hyderabad, Mirpurkhas, KhairpurMirs, Jamshoro and Jacobabad. Demographic information reveals that majority of Badminton players are educated people and they play for fun and keeping health fitness. The empirical evidence suggests that over 53.8% sportspersons got their right knee injured during the play whereas 46.2 respondents got their left knee injured. Badminton is usually played on wooden floors with comfortable arrangement of lighting either indoor or outdoor. However, findings of this study suggest that majority of players do not have such facilities of wooden ground and lighting with no coaches and managers. As a result, most injuries were reported of serious in nature as 92.3 percent players were injured intrinsically. Importantly, the X-ray technique was used in the diagnosis of the injury only. None one of the modern technology such as MRI, ultrasound, Arthrogram and Arthroscopy and consultancy with specialist were used which indicate that either modern facilities were not available or affordable for Badminton players. Respondents shown their interests by responding the facilities they need at the playgrounds. They need Badminton halls and clubs to play, coach to guide, exercise instruments, funds to manage playing material, physiotherapist and Specialist doctor for medical treatment, shuttle cock and venile. It was also demanded by them that funds should be provided and these should be utilized properly. Finally, they proposed that government should establish training centers where the players should be trained for the national and international competitions.

Policy implications

Based on the findings, this study presents some of the implications for policy makers, sportspersons, trainers and coaches. Publication of risks of knee-injury and clinical informative guidelines should be produced to health professionals, trainers, coaches and sportspeople to adopt necessary precautions to avoid harm to the health. Such guidelines should be detailed and extensive to cover first-aid and associated treatment of knee-injury. It is believed that if properly developed, communicated and implemented, guidelines can improve the situation. In case of knee-injury, the available medics, coaches, trainers or sportspeople can use ice, compression, elevation and take rest. This is widely accepted and expected as standard management for all acute musculoskeletal injuries to reduce pain and swelling. Sportspeople should be advised about the risks of further damage to the injury in the early stages. Sportspeople should also be advised to avoid applying heat and massage to the injury. Traditional concepts of management and rehabilitation tended to focus more on regaining strength and motion; however, more recent concepts embody the notion of 'functional rehabilitation' and this includes concepts of agility, proprioception and confidence. It has also been recognized that knee injuries can result in significant disability, and that psychological factors and skills play a critical role in successful injury rehabilitation. Physiotherapists use a wide range of exercise-related interventions in the rehabilitation of knee injuries; however, there is insufficient evidence to establish the effectiveness of any one type of intervention. Proper badminton halls with wooden floor with adequate artificial lighting are urgently required for players. Proper training by qualified coaches with knowledge of the sports injuries and its prevention courses may reduce risk of knee injuries.

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