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FREQUENCY AND ASSOCIATED RISK FACTORS OF ANKLE SPRAIN AMONG BASKETBALL PLAYERS IN PESHAWAR SPORTS COMPLEX AND QAYYUM SPORTS COMPLEX- A CROSS SECTIONAL STUDY

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Abstract

Ankle sprains are a tear of the ligament of the ankle that holds the ankle in place and connects with other bones in the leg and foot. It happens when the foot twists or rolls suddenly, causing the ankle joint to move from its natural position. It was the most frequent kind of ankle injury, and the ankle was the second most often damaged body part. Ligament tears may result in swelling and bruises. Anyone, at any age, can experience it. Walking, running, jumping, landing, uneven surface or even from wearing inappropriate footwear can cause this type of injury. The incidence rate of ankle sprain among Basketball players is 16.9%. Objective: To determine the frequency of ankle sprain among basketball players and identify risk factors associated with this injury. Material And Method: This study is a cross-sectional survey in which a simple random sampling technique was used. Data was collected from the Peshawar sports complex and the Qayyum sports complex. A total of 218 Male participants were added to the study. Data was collected through a Foot and Ankle Disability Index (FADI) and FADI Sports. Significance and association were calculated by using SPSS 27.0. The demographic statistics were calculated, and a frequency table was made. Study duration was 6 months. Results: Our survey aimed to assess the Frequency and associated risk factors of ankle sprain among Basketball players in Peshawar sports complex and Qayyum sports complex. The age ranges from 18 to 35 years, with which mean age is 1.96 ± 0.805. The age (P=<0.001), Pain (P=<0.001), Footwear (P=<0.001), Heavy work (P=<0.001), Ground surface (P=0.002), Jumping (P=<0.001), Landing (P=<0.001), Running (P=<0.001), Low impact activities (P=<0.001) were found to be significantly associated with FADI and FADI Sports. The study is significant because the p-value is less than 0.5. Conclusion: The Study concluded that there was a significant association of Ankle Sprain among Professional and Non-Professional players. The professional players were affected by ankle sprain but the ratio of Non-professional players associated with Ankle sprain was quite high, which shows the hypothesis of the study to be true, because our study shows that there is a significant relation of Ankle sprain among Non-professional players with little knowledge about the game and irregularity. This study confirms that ankle sprain significantly affects the performance of Basketball players.

Keywords: Ankle sprain, Basketball players, Musculoskeletal injuries, Sports injuries, FADI.

INTRODUCTION

The ankle joint is a hinge-type synovial joint formed by the articulation of the tibia, fibula, and talus, with strong collateral ligaments providing support laterally and medially [1]. The medial side is primarily stabilized by the deltoid ligament, while the lateral side is supported by the anterior and posterior talofibular ligaments and the calcaneofibular ligament. Among these, the talofibular ligament is the weakest and most frequently injured [2].

The ankle joint, a vital component of lower body mobility, plays a crucial role in balancing and transmitting forces, particularly when supporting body weight during various movements [3]. Injuries to this joint, such as sprains and strains, occur frequently and can lead to long-term dysfunction [4]. Ankle sprains are the most common type of injury affecting the joint, particularly in sports. Basketball, volleyball, soccer, and rugby are all associated with high rates of ankle injuries [5]. A sprain typically

occurs when the foot suddenly twists or rolls, displacing the ankle joint from its natural position. Risk factors include activities such as running, jumping, landing, walking on uneven surfaces, or wearing improper footwear [6]. Additional risk factors for ankle sprains include age, gender, body mass index (BMI), and anatomical anomalies, with occupation and trauma also playing significant roles [7].

In sports, particularly those involving rapid acceleration, deceleration, and frequent directional changes, ankle sprains are common, leading to both acute and chronic complications [8]. A complex ankle sprain can occur when it is followed by secondary injuries such as fractures or tendon ruptures [9]. These injuries can lead to conditions like ankle instability and post-traumatic osteoarthritis [10, 11]. Even after conservative treatments, such as bracing and physical therapy, a significant proportion of patients report persistent symptoms and long-term functional limitations [12, 13].

Basketball players, in particular, are prone to ankle sprains due to the high-intensity nature of the sport, which involves frequent jumps, sudden stops, and direction changes. The most common mechanism of injury is foot inversion combined with plantar flexion [14]. In severe cases, ligament tears can result in significant structural damage, including peroneal tendon ruptures and capsular injuries. Despite the acute nature of these injuries, they often lead to chronic conditions such as instability and long-term discomfort [15].

This research aims to establish the prevalence of ankle sprains among basketball players and the most important risk factors that can be linked with ankle sprains. The study will help to understand the causes and prevalence of ankle sprains and other underlying causes in such a population by examining the demographic information and other factors contributing to these conditions. This will assist in formulating preventive measures and enhancingthe safety of the players.

MATERIAL AND METHOD

It was a cross-sectional study that was done to test the frequency and risk factors of ankle sprains in basketball players. Male basketball players in two large sports complexes in Peshawar, including the Peshawar Sports Complex and Qayyum Sports Complex, were sampled. The study lasted six months. The purpose of the study was to estimate the incidence of ankle sprains and determine the risk factors associated. The study involved male basketball players of ages 18-35, professional and non-professional. Those participants who had traumatic injuries, ankle fractures, a history of septic ankle arthritis, plantar fasciitis, or cancer were excluded.

The research employed the simple random method of sampling and identified 218 participants in the selected sports complexes. Before data collection, approval was obtained from the authorities at both sports complexes, and each participant was provided with detailed information regarding the purpose of the research. All participants signed consent forms, meaning they participated willingly and kept their information confidential. Direct interaction with the participants was done in the collection of data, where the required data was obtained based on the operational definition of ankle sprain, in which consideration was given to the injuries that were caused by excessive stretching or tearing of the ankle ligaments caused by sudden movements such as twisting, pivoting, or awkward landings in basketball.

Analysis of data was done through SPSS version 27. The frequencies of the data were outlined by the applicability of counts and percentages, as the descriptive statistics were employed to provide an overview of the data. Also, the chi-square test was used to measure the relationship between categorical variables. A P value of 0.05 was taken as a statistically significant value, which means that the two variables being examined have a significant relationship between them. The statistical method enabled the thorough comprehension of the incidence of ankle sprains, as well as the risk factors of ankle sprains in the research group.

RESULTS

In this study, 218 participants were included to find out the Frequency and associated risk factors of ankle sprain among Basketball players in Peshawar sports complex and Qayyum sports complex. The demographic characteristics of the participants in the study were as follows: The majority of participants were aged between 18 and 29 years, with 34.4% (75) falling in the 18 to 23 age group, 35.3% (77) in the 24 to 29 age group, and 30.3% (66) in the 30 to 35 age group. Regarding playing positions, the distribution was fairly even, with 25.3% (55) as point guards, 20.6% (45) as shooting guards, 18.3% (40) as small forwards, 15.2% (33) as power forwards, and 20.6% (45) as centers. In terms of injury side, 52.8% (115) reported injuries to the right side, 29.8% (66) to the left side, and 17.4% (37) had no injury. For player type, 57.3% (125) were professional players, while 42.7% (93) were non-professionals. Footwear usage was almost equally distributed, with 50.5% (110) wearing appropriate footwear and 49.5% (108) not. Previous injury history showed that 34.4% (75) had experienced prior injuries, while 65.6% (143) had no such history. In terms of the time since the injury, 51.4% (112) reported injuries within the past 1 week to 1 month, 18.3% (40) within 2 to 3 months, 13.3% (29) within 4 to 6 months, and 17% (37) had no injuries. The age range is from 18 to 35, with which mean age is 1.96 ± 0.805 shown in Table 01. Table 02 shows the statistics, mean and standard deviation of age. Pain, side of injury, players, and previous injury.

Table 01: Demographic Characteristics

Variables	Categories	Frequency	Percentage
Age	18 to 23	75	34.4 %
	24 to 29	77	35.3 %
	30 to 35	66	30.3 %
Position of Players	Point guard	55	25.3 %
	Shooting guard	45	20.6 %
	Small forward	40	18.3 %
	Power forward	33	15.2 %
	Center	45	20.6 %
Side of injury	Right	115	52.8 %
	Left	66	29.8 %
	No injury	37	17.4 %
Players	Professional	125	57.3 %
	Non Professional	93	42.7 %
Footwear	Yes	110	50.5 %
	No	108	49.5 %
Previous injury	Yes	75	34.4 %
	No	143	65.6 %
Time of injury	1 week to 1 month	112	51.4 %
	2 to 3 months	40	18.3 %
	4 to 6 months	29	13.3 %
	No injury	37	17 %

Table 02: Mean and standard deviation of Age, Side of injury, Players, Previous injury and Pain.

Statistics					
	Age category	Side of injury	Players	Previous injury	Pain
N	218	218	218	218	218
	0	0	0	0	0
Mean	1.96	1.65	1.43	1.66	2.29
Std. Deviation	0.805	0.761	0.496	0.476	1.046

In table 03 show the statistical value of pain in which 27.5% had severe pain, 32.1% had moderate pain, 23.9% had mild pain and 16.5% had no pain in a total population of 218.

Table 03: Pain, frequency, percent

Pain		Frequency	Percent
	severe pain	60	27.5
	Moderate pain	70	32.1
	mild pain	52	23.9
	no pain	36	16.5
	Total	218	100.0

Players and Pain

This Analysis of players and pain showed that the total number of Professional players was 125 in which 35 had mild pain, 40 had moderate pain, 20 had severe pain and 30 had no pain. Total number of Non professional players was 93 in which 17 had mild pain, 30 had moderate pain, 40 had severe pain and 6 had no pain. A statistical significant association between players and Pain is P= < .001. (Table 04).

Table 04: Players and pain

Pain in Players				
Count				
		Players		Total
		Professional	Non professional	
Pain	severe pain	20	40	60

	Moderate pain	40	30	70
	mild pain	35	17	52
	no pain	30	6	36
Total		125	93	218
P.Value		**<0.001**		

Frequency, Age Category of Players VS FADI Association

This analysis of age group of players and FADI showed that total number of professional players who are aged from 18 to 23 years was 40 in which 15 had mild disability ,10 had moderate disability, 5 had severe disability and 10 had no disability. In 24 to 29 years age group the total number of professional players is 45 in which 10 had mild disability, 13 had moderate disability, 10 had severe disability and 12 had no disability. In the 30 to 35-year age group, the total number of Participants is 40, of which 10 had mild disability, 17 had moderate disability, 5 had severe disability, and 8 had no disability. The total number of Non-Professional players who are aged from 18 to 23 years was 35 in which 7 had mild , 11 had moderate, 15 had severe and 2 had no disability. In 24 to 29yrs age group, 4 had mild, 8 had moderate, 17 had severe, and 3 had no disability. In 30 to 35yrs age group, 6 had mild, 12 had moderate, 6 had severe and 2 had no disability. A statistically significant association between Age, Players, and FADI is P=<0.001. (Table 05).

Table 05: Frequency, Age Category of Players VS FADI Association

Players			**FADI**				**Total**
			>68 Mild	**<68 Moderate**	**<34 Severe**	**No injury**	
professional	Age category	18-23	15	10	5	10	40
		24-29	10	13	10	12	45
		30-35	10	17	5	8	40
	Total		35	40	20	30	125
Non professional	Age category	18-23	7	11	15	2	35
		24-29	4	8	17	3	32
		30-35	6	12	6	2	26
	Total		17	31	38	7	93
Total	Age category	18-23	22	21	20	12	75
		24-29	14	21	27	15	77
		30-35	16	29	11	10	66
	Total		52	71	58	37	218
P. Value	<0.001						

Players and Footwear Vs FADI Association

The analysis of footwear in players and FADI showed that the total number of those Professional players who are using footwear is 70 in which 40 had mild disability, 15 had moderate disability, 6 had severe disability and 9 had no disabilty. The total number of those professional players who are not using footwear is 55 in which 10 had mild disability, 25 had moderate disability, 17 had severe disability and 3 had no disability. The total number of those Non-Professional Players who are using Footwear is 40 in which 12 had mild disability, 18 had moderate disability, 6 had severe disability and 4 had no disability. The total number of those Non-professional players who are not using footwear is 53 in which 5 had mild disability, 10 had moderate disability, 35 had severe disability and 3 had no disability. This analysis showed the statistical significance value of P= <0.001. (Table 06).

Table 06: Players and Footwear Vs FADI Association

Footwear and Players VS FADI							
Count							
Players			FADI				Total
			>68 Mild	<68 Moderate	<34 Severe	no injury	
Professional	Footwear	with footwear	40	15	6	9	70
		without footwear	10	25	17	3	55
	Total		50	40	23	12	125
Non professional	Footwear	with footwear	12	18	6	4	40
		without footwear	5	10	35	3	53
	Total		17	28	41	7	93
Total	Footwear	with footwear	52	33	12	13	110
		without footwear	15	35	52	6	108
	Total		67	68	64	19	218
P.Value	< 0.001						

Players and Ground surface VS FADI Association

The analysis of players who are played on different ground surfaces and FADI showed that the total number of those professional players who are played on Even surface is 70 in which 25 had mild disability, 20 had moderate disability, 10 had svere disability and 15 had no disability. The total number of those professional players who are played on Uneven surface is 55 in which 10 had mild disability, 20 had moderate disability, 20 had severe disability and 5 had no disbility. Now the total number of Non-professional players who are played on Even surface is 40 in which 10 had mild disability, 15 had moderate disability, 12 had severe disabilty and 3 had no disability. The total number of Non-professional players who are played on Uneven surface is 53 in which 10 had mild disability, 17 had moderate disability, 23 had severe disability and 3 had no disability. The statistical significance value is P=0.002. (Table 07).

Table 07: Players and Ground surface VS FADI Association

Ground surface And players VS FADI							
Count							
Players			FADI				Total
			>68 Mild	<68 Moderate	<34 Severe	no injury	
Professional	Ground surface	even surface	25	20	10	15	70
		uneven surface	10	20	20	5	55
	Total		35	40	30	20	125
Non professional	Ground surface	even surface	10	15	12	3	40
		uneven surface	10	17	23	3	53
	Total		20	32	35	6	93
Total	Ground surface	even surface	35	35	22	18	110
		uneven surface	20	37	43	8	108
	Total		55	72	65	26	218
P.Value	0.002						

Heavy work of players Vs FADI Association

The analysis of Heavy work of players Vs FADI showed that the total number of professional players is 125 in which 20 had severe difficulty, 35 had moderate difficulty, 45 had mild difficulty and 25 had no difficulty. The total number of Non-professional players is 93 in which 37 had severe difficulty, 28 had moderate difficulty, 22 had mild difficulty and 6 had no difficulty. The statistical significance value is P=<0.001. (Table 08).

Table 8: Heavy work of players Vs FADI Association

Heavy work (push,pulling,climbing,carrying) of Players VS FADI							
Count							
Players			FADI				Total
			>68 Mild	<68 Moderate	<34 Severe	no injury	
Professional	Heavy work (push,pulling,climbing, carrying)	severe difficulty	0	0	20	0	20
		moderate difficulty	0	35	0	0	35
		Mild difficulty	45	0	0	0	45
		No difficulty	0	0	0	25	25
	Total		45	35	20	25	125
Non professional	Heavy work (push,pulling,climbing, carrying)	severe difficulty	0	0	37	0	37
		moderate difficulty	0	28	0	0	28
		Mild difficulty	22	0	0	0	22
		No difficulty	0	0	0	6	6
	Total		22	28	37	6	93
Total	Heavy work (push, pulling,climbing, carrying)	severe difficulty	0	0	57	0	57
		moderate difficulty	0	63	0	0	63
		Mild difficulty	67	0	0	0	67
		No difficulty	0	0	0	31	31
	Total		67	63	57	31	218
P.Value	<0.001						

Jumping of Players VS FADI SPORTS Association

The Analysis of JUMPING of Players vs FADI SPORTS showed that the total number of professional players is 125, of which 23 had severe disability, 45 had moderate disability, 32 had mild disability, and 25 had no disability. According to FADI Sports. The total number of non-professional players is 93, of which 38 had severe disability, 34 had moderate disability, 16 had mild disability, and 5 had no disability, according to FADI SPORTS. The statistical significance value is P <0.001. (Table 09).

Table 09: Jumping of Players VS FADI SPORTS Association:

Players, Jumping VS FADI SPORTS							
Count							
Players			FADI SPORTS				Total
			>24 mild	<24 Moderate	<14 Severe	>30 no injury	
Professional	Jumping	Extreme disability	0	0	23	0	23
		moderate disability	0	45	0	0	45
		mild disability	32	0	0	0	32
		no disability	0	0	0	25	25
	Total		32	45	23	25	125
Non Professional	Jumping	Extreme disability	0	0	38	0	38
		moderate disability	0	34	0	0	34
		mild disability	16	0	0	0	16
		no disability	0	0	0	5	5
	Total		16	34	38	5	93

Total	**Jumping**	Extreme disability	0	0	61	0	61
		moderate disability	0	79	0	0	79
		mild disability	48	0	0	0	48
		no disability	0	0	0	30	30
	Total		48	79	61	30	218
P.Value							

Landing of players Vs FADI Sports Association

The Analysis of the landing of Players vs FADI SPORTS showed that the total number of professional players is 125, of which 25 had severe disability, 40 had moderate disability, 40 had mild disability, and 20 had no disability. According to FADI Sports. The total number of non-professional players is 93, of which 40 had severe disability, 33 had moderate disability, 17 had mild disability, and 3 had no disability, according to FADI SPORTS. The statistical significance value is P <0.001. (Table 10).

Table 10: Landing of players Vs FADI Sports Association

Players, Landing Vs FADI SPORTS							
Count							
Players			**FADI SPORTS**				**Total**
			>24 mild	**<24 Moderate**	**<14 Severe**	**>30 no ijury**	
professional	**Landing**	Extreme disability	0	0	25	0	25
		moderate disability	0	40	0	0	40
		mild disability	40	0	0	0	40
		no disability	0	0	0	20	20
	Total		40	40	25	20	125
non professional	**Landing**	Extreme disability	0	0	40	0	40
		moderate disability	0	33	0	0	33
		mild disability	17	0	0	0	17
		no disability	0	0	0	3	3
	Total		17	33	40	3	93
Total	**Landing**	Extreme disability	0	0	65	0	65
		moderate disability	0	73	0	0	73
		mild disability	57	0	0	0	57
		no disability	0	0	0	23	23
	Total		57	73	65	23	218
P.Value	<0.001						

Running of players VS FADI Sports Association

The Analysis of RUNNING of Players VS FADI SPORTS showed that the total number of professional players is 125, in which 20 had severe disability, 37 had moderate disability, 47 had mild disability and 21 had no disability According to FADI SPORTS. The total number of Non professional players is 93, in which 37 had severe disability, 34 had moderate disability, 18 had mild disability and 4 had no disability, According to FADI SPORTS. The statistical significance value is P=<0.001. (Table 11).

Table 11: Running of players VS FADI Sports Association:

Low impact activities of Players VS FADI SPORTS							
Count							
Players			FADI_Sports				Total
			>24 mild	<24 Moderate	<14 Severe	>30 no ijury	
Professional	Low impact activities	Extreme disability	0	0	13	0	13
		moderate disability	0	34	0	0	34
		Mild disability	44	0	0	0	44
		No disability	0	0	0	34	34
	Total		44	34	13	34	125
Non professional	Low impact activities	Extreme disability	0	0	26	0	26
		moderate disability	0	36	0	0	36
		Mild disability	19	0	0	0	19
		No disability	0	0	0	12	12
	Total		19	36	26	12	93
Total	Low impact activities	Extreme disability	0	0	39	0	39
		moderate disability	0	70	0	0	70
		Mild disability	63	0	0	0	63
		No disability	0	0	0	46	46
	Total		63	70	39	46	218
P.Value	<0.001						

Low impact Activities of Players VS FADI SPORTS Association

The Analysis of Low imapct activities of Players VS FADI SPORTS showed that the total number of professional players is 125, in which 13 had severe disability, 34 had moderate disability, 44 had mild disability and 34 had no disability According to FADI SPORTS. The total number of Non professional players is 93, in which 26 had severe disability, 36 had moderate disability, 19 had mild disability and 12 had no disability, according to FADI SPORTS. The statistical significance value is P <0.001 (Table 12).

Table 12: Low impact Activities of Players VS FADI SPORTS Association

Low impact activities of Players VS FADI SPORTS							
Count							
Players			FADI_Sports				Total
			>24 mild	<24 Moderate	<14 Severe	>30 no ijury	
Professional	Low impact activities	Extreme disability	0	0	13	0	13
		moderate disability	0	34	0	0	34
		Mild disability	44	0	0	0	44
		No disability	0	0	0	34	34
	Total		44	34	13	34	125
Non professional	Low impact activities	Extreme disability	0	0	26	0	26
		moderate disability	0	36	0	0	36
		Mild disability	19	0	0	0	19
		No disability	0	0	0	12	12
	Total		19	36	26	12	93
Total	Low impact activities	Extreme disability	0	0	39	0	39
		moderate disability	0	70	0	0	70
		Mild disability	63	0	0	0	63
		No disability	0	0	0	46	46
	Total		63	70	39	46	218
P.Value	<0.001						

DISCUSSION

Ankle sprains were the most frequent kind of ankle injury and the ankle was the second most often damaged body part after the knee. Ankle sprains and ankle injuries were common in court games and team sports including basketball, rugby, soccer and volleyball. It happens when the foot twists or rolls suddenly, causing the ankle joint to move from its natural position. Ligament tears may result in swelling and bruises. The most frequent ankle injury is a sprain, which frequently occurs when the lateral collateral ligament complex is affected by inversion and plantar flexion. Sports involving acceleration, deceleration, and direction changes are common causes of inversion ankle sprains. A complex ankle sprain occurs when an ankle sprain is followed by an orthopaedic condition, such as a strain, fracture, tendon rupture, or dislocation.

In Pakistan, Professional basketball players compete at the national level. While the national level is the highest, there are also regional level, district level, club level, and local leagues and competitions that contribute to the overall basketball ecosystem in Pakistan. Professional basketball players, particularly, represent the pinnacle of basketball skill and athleticism. They are defined by their exceptional physical attributes, mastery of fundamental skills, strength, agility, endurance, and strategic understanding of the game. Their abilities consistently outperform even the most talented players at lower levels, demonstrating a level of execution and impact that sets them apart. Professional basketball players are not just skilled athletes; they are highly trained individuals who combine physical gifts with strategic thinking, mental fortitude, and a passion for the game, making them a cut above the rest.

In Pakistan, Non-professional basketball players participate at the school, college, university, and local club levels. Non-professional basketball players can be categorized into various levels, ranging from casual recreational players and not regularly play and have less knowledge about the game, have weak Fundamental skills, strength, agility, endurance, and strategic understanding of the game. Improving these skills can be achieved through consistent practice and by observing and learning from more experienced players [16, 17].

This study aimed to assess the Frequency and associated risk factors of ankle sprain among Basketball players. A total of 218 male basketball players aged 18-35 years participated in the survey, with a mean age of 1.96 ± 0.805. The results showed that ankle sprains were common among the participants, with 51.4% experiencing acute injuries, 31.6% experiencing chronic injuries, and 17% having no injury. Our results showed that ankle sprains are more common in Non-Professional players. The risk factors associated with ankle sprains included playing basketball, playing on uneven surfaces, landing, jumping, running, and improper footwear. The study also found that the severity of ankle sprain injuries varied across different age groups and player categories. Specifically, younger players 24-29 year tended to have severe disabilities, age 18-23 year tended to have milder disabilities, and age 30-35 year tended to have moderate disabilities. This highlights the importance of an even ground surface during a basketball game to reduce the risk of ankle sprain. During jumping activity of players, the severity is more common among Non-professional and among professional players, moderate disability is greater. During landing, the severity is also greater in Non-professional players and milder, moderate disabilities in professional players. Running is also a risk factor for ankle sprain, milder and moderate disabilities are less, and severe disabilities are more in Non-professional players. Severe disabilities are less, Milder disabilities are more in professional players during running. Low-impact activities of professional players were not commonly affected by ankle sprain because the milder disabilities and no disabilities were High and among Non-professional players, the moderate disabilities were quite high. So our study results showed that Ankle sprain is more common in Non-professional players.

A Study conducted by Stojanovic et al., that the incidence of ACL injuries and ankle sprains in basketball players differed by player sex, playing level (amateur, intermediate, and elite), and exposure type (training versus games). According to sex comparisons, female basketball players were roughly compared to male basketball players; they were 9% less likely to experience an ankle sprain (data only available for players competing at amateur and intermediate playing levels), but three times more likely to incur ACL injuries regardless of playing level. Additionally, the prevalence of ACL injuries and ankle sprains rose with increasing playing level; basketball players were three times more likely to suffer ankle sprains and six to eight times more likely to develop ACL injuries during games than during practice [18]. The resemblance was found with the prevalence study by Ahmad et al. that 59.4%) players were having MSK injuries. The most injured anatomical sites of volleyball and basketball players were the ankle (21.8%) (S. 19). However, Delowar Hossain Chowdhury (2018) [20] found that the most often damaged anatomical sites among basketball, volleyball players were the knee (27.4%), ankle (22.6%), shoulder (16.1%), and lower back (14.5%) in a cross-sectional study carried out in Bangladesh (20). It is investigated by Azuma et al in Japan that the volleyball players most frequently get injuries to their ankle joints [22].

According to De Noronha, Lay, [23] study during the second half or the last minutes (second quarter) of the first half are the times when ankle sprains are more prone to happen during basketball. One explanation for this pattern could be the consequences of exhaustion and the resulting increased risk of ankle sprains, although the exact causes remain unknown [24]. According to the research's findings, injuries increased more noticeably during the soccer match's 30th to 35th minute. Men are

more likely to sustain an injury, specifically an ankle sprain, than women (51% versus 75.7%). Direct boredom from an opponent is the most frequent mechanism of sprain injury. Compared to injuries sustained during a workout, adult males are four to six times more likely to sustain injuries during a match. The frequency of injuries in adult females varies from 1.2 to 7 per 1,000 training hours and from 12.6 to 24 per 1,000 competition hours. Additionally, among teenage boys, competition-related injuries occur 3.9 times more frequently than training-related injuries [24].

According to Minghelli et al., 2022 [25,26]. A total of 494 injuries were reported by 239 (66.2%) players during practice, while 244 injuries were recorded by 174 (48.0%) players during the previous year. Injuries per 1,000 hours of basketball practice were 2.72. Sprains accounted for 43.8% of all injuries, whereas the ankle accounted for 40.1%. Impacts with other athletes were the main cause of injuries (19.4%). Basketball players who worked out more than four times a week had a 2.21 higher risk of getting hurt (95% CI: 1.3–3.5; p=0.003) than those who worked out less frequently [27].

LIMITATIONS OF THE STUDY

This study focused on only a few complexes in Peshawar, so the sample size is small; the sample was limited to 218 players. A larger sample size would be better. Many players were not cooperative, and female players were not included. Our findings may not be generalizable to other nations due to the differences in race, culture, workplaces, and medical insurance. There was no clinical or radiological verification of ankle sprain; all diagnoses were based on a subjective questionnaire.

CONCLUSION

Basketball is a contact sport that involves actions such as running, jumping, and abrupt changes indirection several times, and these repetitive movements can lead to injuries. Study concluded that there was a significant association of Ankle Sprain among Professional and Non-Professional players. The professional players were affected by ankle sprain, but the ratio of Non-professional players associated with Ankle sprain was quite high, which shows the hypothesis of the study to be true because our study shows that there is a significant relationship of Ankle sprain among Non-professional players.

This study reveals that there is an effect of ankle sprain on basketball players. There is an association between age and disability; participants aged < 29 years showed more disability, and >30 years had less disability. There is an association between injury and FADI, which showed 82.9% had injury and 17.1% had no injury, 52.8% injuries occurred to the right ankle, and 29.8% injuries occurred to the left ankle. There is an association between footwear and disability, showing that without footwear, the injury is more frequent. There is an association between ground surface and disability, showing that when playing on uneven ground surface, the occurrence of ankle sprain is common. Also association between jumping, Landing, running, and disability.

RECOMMENDATIONS

This study should be conducted at the provincial level, and a longitudinal study should be performed for good inter- and intra-rater reliability. The population and sample size should be larger. This study revealed that there is a lack of awareness regarding the use of proper footwear before playing a game, so it is recommended to use proper footwear and practice the techniques of the game. There is a need to do more RCTs so we can treat athletes accordingly.

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INFORM CONSENT AND ETHICAL CONSIDERATIONS

Taken from the Study Participants

AUTHOR CONTRIBUTION

All authors are contributed equally

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