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Prevalence of Ankle Injuries Among Sport Participants of Federal University Dutse

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Abstract

Ankle pain is a common condition among sport participants, particularly in sports that involve repetitive jumping, landing, and twisting movements. A study conducted by researchers at the University of Southern California found that the prevalence of ankle injuries among sport participants is higher than previously thought. The study involved 170 sport participants, including basketball players, volleyball players, and soccer players. The participants completed a questionnaire that assessed their history of ankle injuries/pain and the severity of their symptoms. The researchers also conducted physical examinations to evaluate the range of motion, strength, and stability of the participants' ankles. (Arnason A et al.,2007) However there is no available data for sport participant of Federal University Dutse under the following research topic. The aim of this study was to explore the prevalence and risk factors of ankle injuries among sport participants of federal university students. A descriptive cross sectional study design was used and a sample of 220 individuals that participate in sport. The instrument used was structured questionnaire of ankle pain among sport participants. Descriptive statistics was employed to analyses the data obtained using SPSS version 27. 220 sport participants participated in the study; from the result of the study majority of the participants have experience ankle pain. From the result of the study prevalence of ankle injuries among sport participant of Federal University Dutse were high and the risk factors of ankle pain include symptoms, pain and functional activities and the most common type of injury was ankle pain.

Keywords*: prevalence, ankle injuries, sport participants*

Introduction

Ankle sprain was the major ankle injury in 33 of 43 sports, especially in Australian football, field hockey, handball, orienteering, scooter and squash. In sports injuries throughout the countries studied, the ankle was the second most common injured body site after the knee, and ankle sprain was the most common type of ankle injury. The incidence of ankle injury and ankle sprain was high in court games and team sports, such as rugby, soccer, volleyball, handball and basketball.[1] Ankle pain is the most common ankle injury experienced by individuals involved in physical activity, comprising approximately 80% of ankle injuries.[2]

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The recognition of risk factors leading to ankle pain appears to be the keystone for effective ankle pain injury prevention strategies.[3] Two types of risk factors are suggested: extrinsic and intrinsic risk factors. Extrinsic risk factors include the total amount of training and number of played games, climatic factors, pitch surface, playing field status, equipment, and rough play. Intrinsic risk factors include joint flexibility, instability, preceding injuries, and inadequate rehabilitation.[4] Previous studies reported that players with histories of ankle pain, players wearing air-filled heel shoes, and players who did not stretch the ankle joint structure before exercising were 4.9, 4.3, and 2.6 times more likely to withstand an ankle pain. Limited dorsiflexion movement in the ankle[5], the usage of artificial turf ground while playing soccer[6], and posterior-positioned fibula [7] were also reported as risk factors for ankle pain.

The aim of this study was to determine the prevalence and risk factors of ankle injuries among students of Federal University Dutse.

Methodology

Research design

The research design that was employed for the conduct of this study was cross-sectional survey.

Population of the study

The population of the study comprised of 220 students of Federal University Dutse participating in different sport activities.

Sample size and technique

Sample size was determined by the use of an equation. The formula used to calculate the minimum sample size that is required for this study is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

n=Sample Size
N=Population Size
e=Margin of error

Where N= Total number of population
e= error margin= 0.05 or 5%

So, the Sample Size for this study is (n) = $\frac{500}{1+500\times(0.05)}$ = 220

Sample technique

The participants were selected using simple random and purposive sampling techniques. The sampling technique used for prospective study was simple random and purposive sampling techniques. A total of 220 students of FUD participating in sport were recruited in the study. Data for anthropometric and sociodemographic study was obtained using a structured questionnaire. Informed consent was obtained from the participants prior to commencement of the study.

Inclusion criteria

The inclusion criteria were as follows:

1. Sport participant between below and above 20 years of age.
2. Both male and female genders

Exclusion criteria

The exclusion criteria were as follows:

1. Any underlying inflammatory symptoms (e.g., redness, swelling, pain, limited range of motion).
2. Assessed through taking a full history.

3. And any ankle or foot congenital diseases or abnormalities.

Ethical consideration

Prior to commencement of the study, a letter of introduction was obtained from Department of Human Anatomy, Federal University Dutse which was submitted to the faculty of Basic medical sciences. It was emphasized to the participants that participation in the study is voluntary. The purpose and value of the study as well as the role of the participants in the study was fully explained. The contents of the consent forms were fully explained to the participants and they were told that they are free to withdraw their participation from the study at any given point in time.

Data analysis procedure

Data obtained from the study was analyzed using statistical package for social scientist (SPSS) version 27. Results were presented using descriptive statistics. Pearson's correlation and Chi square was used to determine the prevalence of ankle pain among sport participants of Federal University Dutse

Results

A total of 220 individual participate response to the question about prevalence of ankle injuries among sport participant of Federal University Dutse. This chapter focuses on result and discussion. Table 1 presents the general characteristics of the respondents. A total of 220 respondents participated in the study. The majority of the respondents were >20 years old (n = 129, 58.6%) and Hausa (n = 80, 36.4%). Those that play football (n = 70, 31.8%), and all the respondents were single (n = 220, 100%).

Table 1: The general characteristics of the participants

VARIABLES	FREQUENCY	PERCENTAGE
Gender		
Male	161	73.2
Female	59	26.8
Age (years)		
≤ 20	91	41.4
> 20	129	58.6
Marital status		
Single	220	100
Married		
Ethnicity		
Hausa	80	36.4
Fulani	39	17.7
Yoruba	53	24.1
Other	48	21.8
Type of sport		
Football	70	31.8
Basketball	45	20.5
Volleyball	35	15.9
Badminton	24	10.9

Handball	46	20.9

Table 2 presents the descriptive characteristics of the symptoms. Among the study respondents, the highest percentage of them reported never for foot or ankle swelling (34.1%) and foot or ankle catching or hanging up when moving (37.3%), sometimes for feeling grinding; hear clicking or any other type of noise when your foot or ankle moves (46.8%), and always for ability to straighten their foot ankle fully (38.2%) and bending their foot or ankle fully (34.1%).

Table 4.2: Descriptive results of symptoms

VARIABLE	Never	Rarely	Sometimes	Often	Always
	F (%)	F (%)	F (%)	F (%)	F (%)
Do you have swelling in your foot or ankle?	75 (34.1)	55 (25.0)	74 (33.6)	16 (7.3)	0 (0)
Do you feel grinding; hear clicking or any other type of noise when your foot or ankle moves?	60 (27.3)	45 (20.5)	103 (46.8)	11 (5.0)	1 (0.5)
Does your foot or ankle catch or hang up when moving?	82 (37.3)	60 (27.3)	57 (25.9)	16 (7.3)	5 (2.3)
Can you straighten your foot ankle fully?	33 (15.0)	13 (5.9)	54 (24.5)	36 (16.4)	84 (38.2)
Can you bend your foot or ankle fully?	40 (18.2)	17 (7.7)	61 (27.7)	27 (12.3)	75 (34.1)

Table 2 presents the mean difference of total symptoms score across the participant's general characteristics. The result shows that there was no significant mean difference of total symptoms score across the participant's general characteristics ($P > 0.05$). However, the male possess higher mean symptoms (13.64) compared to the females (13.05), $P = 0.293$. Also, mean pain was highest among those above 20 years (13.67), others (13.71), and football (13.54).

Table 3: The mean difference of total symptoms score across the participants general characteristics

DF = degree of freedom, SD = standard deviation

VARIABLES	Mean (SD)	t-stat/F (DF)	P
Gender			
Male	13.64 (3.47)	1.06 (218)	0.293
Female	13.05 (4.17)		
Age (years)			
≤ 20	13.21 (3.56)	-0.93	0.355
> 20	13.67 (3.75)		
Ethnicity		0.17 (3, 219)	0.919
Hausa	13.55 (3.51)		
Fulani	13.18 (4.51)		
Yoruba	13.39 (3.79)		
Other	13.71 (3.08)		
Type of sport		0.98 (4, 219)	0.418
Football	13.54 (3.84)		
Basketball	12.95 (3.72)		
Volleyball	14.43 (3.05)		
Badminton	12.87 (4.44)		
Handball	13.51 (3.32)		

Table 3 presents the mean difference of total pain score across the participant's general characteristics. The result shows that there was no significant mean difference of total pain score across the participant's general characteristics (P > 0.05). However, the male possess higher mean pain (13.40) compared to the females (13.34), P = 0.925. Also, mean pain was highest among those above 20 years (13.60), Fulani (14.56), and volley ball players (14.60).

Table 4: The mean difference of total pain score across the participants general characteristics

VARIABLES	Mean (SD)	t-stat/F (DF)	P
Gender			
Male	13.40 (4.44)	0.094 (218)	0.925
Female	13.34 (4.69)		
Age (years)			
≤ 20	13.07(4.58)	-0.856 (218)	0.390
> 20	13.60(4.45)		
Ethnicity		2.212 (3, 219)	0.091
Hausa	13.86(4.98)		
Fulani	14.56 (3.74)		
Yoruba	13.06 (4.05)		
Other	12.16 (4.53)		
Type of sport		1.94 (4, 219)	0.110

Football	12.49(4.50)
Basketball	12.93 (4.84)
Volleyball	14.60 (4.24)
Badminton	13.37 (4.86)
Handball	14.28 (3.94)

DF = degree of freedom, SD = standard deviation

Table 4 presents the mean difference of the total function score across the participant's general characteristics. The result shows that there was a significant mean difference in the total function score across gender, ethnicity, and sport type. The males possess a higher mean function score (16.01) compared to the females (13.92), P = 0.030. The mean function score was higher among the Hausa (16.78) and Fulani (16.10) compared to the Yoruba (14.62) and others (13.60), P = 0.031. In addition, the mean function was higher among those playing handball (18.37) compared to other sports (P = 0.001).

Table 5: The mean difference of total function score across the participants general characteristics

VARIABLE	Mean (SD)	t-stat/F (DF)	P
Gender			
Male	16.01 (6.60)	2.18 (218)	0.030
Female	13.92 (5.39)		
Age (years)			
≤ 20	15.42 (5.89)	-0.54 (218)	0.957
> 20	15.46 (6.68)		
Ethnicity		3.03 (3, 219)	0.031
Hausa	16.78 (6.65)		
Fulani	16.10 (6.77)		
Yoruba	14.62 (6.85)		
Other	13.60 (4.18)		
Type of sport		4.82 (4, 219)	0.001
Football	13.72 (6.41)		
Basketball	14.04 (5.66)		
Volleyball	16.17 (5.65)		

Badminton	16.42 (7.76)
Handball	18.37 (5.59)

DF = degree of freedom, SD = standard deviation

Discussion

Based on the descriptive results presented in Table 1 Majority of the participant in this study were above 20 years (58.6%), male (73.3%) as a result of male participates in sport more than female, Hausa ethnicity (36.4%) which may be due to high proportion of Hausa tribes in the university. The entire participants in the study were single. A higher proportion of the respondents participate in football (31.8%) this may be due to reason that the sport is more familiar. Based on the descriptive results presented in Table 2, Among the study respondents, the highest percentage of them reported never for foot or ankle swelling (34.1%) and foot or ankle catching or hanging up when moving (37.3%), sometimes for feeling grinding; hear clicking or any other type of noise when your foot or ankle moves (46.8%), and always for ability to straighten their foot ankle fully (38.2%) and bending their foot or ankle fully (34.1%).

Many studies found previous ankle pain as a significant risk factor for the recurrent ankle pain. One group reported that 60% of the ankle pain occurred in players with a history of previous ankle pain.[1] In another study, 9 of 13 ankle pain (69%) were associated with a history of previous ankle pain.[8] footballers having a previous history of ankle pain were 4.9 times more likely to sustain a recurrent ankle pain than footballers without previous ankle pain.[2] also reported that footballers with a history of ankle pain are at a higher risk of future ankle pain than footballers with no previous ankle pain. These findings are consistent with those of the present study.

Most of the footballers acknowledged using regular stretching exercises for injury prevention; stretching exercises are commonly used for warm-up or cool-down routines[9] and are useful to increase muscle extensibility and for prevention of sport-related pains. Kaini *et al*.[10] reported that sports-specific warm-up, including dynamic stretching, could prevent ankle pain. In another study, it was reported that stretching exercises of certain muscles and joints for certain activities may enhance the effectiveness of these pre-exercise activities. The results of these studies are consistent with those of the present study in that footballers who perform stretching exercises before playing have a lower risk of ankle pain.

Conclusion

The prevalence of ankle injuries among sport participant of Federal University Dutse were high and the risk factors of ankle pain include symptoms, pain and functional activities and the most common type of injury was ankle pain.

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