SAS Journal of Medicine (SASJM) **ISSN 2454-5112**
Abbreviated Key Title: SAS J. Med.

A Unit of Scholars Academic and Scientific Society, India

Prevalence of Functional Ankle Instability among University Athletes

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Original Research Article

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Article History
Received: 08.09.2018
Accepted: 19.09.2018
Published: 30.09.2018

DOI:
10.21276/sasjm.2018.4.9.4

Abstract: The primary objective of the study is to find out the prevalence of functional ankle instability and the factors influencing it among the sports persons. Information on functional ankle instability was collected through a questionnaire from students of Physical Education Department, Annamalai University, Tamilnadu. The age group of the athletes included in the study was 17 to 35 years. 453 athletes were willing to participate and were distributed with Modified Ankle Instability questionnaire with brief explanation about the questionnaire.12 questionnaires were found to be incomplete and the remaining 441 completed questionnaires were taken for data analysis. The prevalence of functional ankle instability (FAI) was found to be 18.4%.Males (29%) are more affected than females (14%).The prevalence of FAI was seen most commonly in the age group of 21-25 years. There was a strong correlation between the participating event and the occurrence of functional ankle instability. Common games giving rise to functional ankle instability was found to be football and hockey.
Keywords: Functional ankle instability, Prevalence, Athletes, Modified ankle instability questionnaire.

INTRODUCTION

The ankle is an amazing structure because it helps transfer vertical to horizontal weight bearing and rarely deteriorates over the course of a life time. In recent years, participation in sports has increased, resulting in an increase in sports-related injuries. These injuries frequently involve the lower extremities especially the ankle joint [1]. Overall, ankle sprains are slightly more likely to occur in males (50.3%) than in females (49.7%) and nine times more likely to occur in younger than in older individuals.

Eighty five percent of all ankle sprains occur on the lateral aspect of the ankle result from inversion injury, involving the anterior talofibular ligament and calcaneofibular ligament. Another 5% to 10% are syndesmotic injuries which involves a partial tear of the distal anterior tibiofibular ligament. Only 5% of all ankle sprains involve the medial aspect of the ankle result from eversion injury as the strong medial deltoid ligament is resistant to tearing [2]. It is estimated that 20%to 40% of ankle sprains leads to functional ankle instability [3].

The development of repetitive ankle sprains and persistent residual symptoms such as repeated episodes of ankle giving way, pain, weakness, loss of function, and feeling of ankle instability after injury has been termed chronic ankle instability (CAI) .CAI can be caused by either mechanical ankle instability (MAI), functional ankle instability (FAI),or both. Mechanical instability has been defined as ankle movement beyond the physiologic limit of the ankle range of motion and is frequently quantified through the measurement of joint flexibility [4].The term functional ankle instability (FAI) describes the subjective feeling of the ankle "giving way", and was first conceptualised by Freeman (1965).The relationship between ankle injury, proprioceptive, and balance deficits was also proposed by Freeman in 1965. Since this time altered proprioception has been proposed as a predisposing factor to ankle injury when deficits exist. The deterioration of proprioceptive sensibility causes difficulties in postural control and induces instability in the ankle joints.

For a sports physician every athlete is unique with special needs. Incomplete recovery or inadequate rehabilitation may predispose the patient to reinjury. This leads to functional ankle instability in athletes and it limiting their performance in sports. Thus such studies are required for betterment of budding athletes in India. There are many prevalence studies on sports injury;

however the prevalence of functional ankle instability and its effect on the level of athletic performance are rare.

MATERIALS AND METHODS

This descriptive study was conducted among athletes in the age group of 17 to 35 years from the Department of Physical Education and Sports Science, Annamalai University, Tamilnadu. Modified ankle instability instrument questionnaire contains 11 yes/no type questions.9 questions focus on ankle injury, last 2 questions focus on knee for exclusion purpose.453athletes were willing to participate and were distributed with Modified Ankle Instability questionnaire with brief explanation about the questionnaire.12 questionnaires were found to be incomplete and the remaining 441 completed questionnaires were taken for data analysis.

RESULTS AND INTERPRETATION

Among the 441 questionnaires, 207 were excluded as they have knee and leg injuries. With the remaining 234, the prevalence of FAI was 18.4% .The most commonly affected age group was 21-25 years (26.4%). Males (23%) are more affected than females (14%) with a significant p value of 0.048 .The prevalence of FAI was strongly associated with the game played by the athletes. The most common being football and hockey, followed by basketball and handball.

Table-1: Distribution of background variables

Variable	Number	Percent
Age :		
<20	140	31.7
21-25	230	52.2
>25	71	16.1
Sex :		
Male	258	58.5
Female	183	41.5
BMI :		
Underweight<18.5	90	20.4
Normal 18.5 – 24.9	325	73.7
Overweight 25 -29.9	26	5.9
Obese >30	-	-
Event Participating :		
I - Football	114	25.85
Hockey	22	4.98
II - Volleyball	54	12.24
Tennis	28	6.34
Badminton	25	5.66
III - Basketball	64	14.51
Handball	34	7.70
IV -Others -Athletics	23	5.21
Kabadi	23	5.21
Kho-Kho	5	1.13
Cricket	13	2.94
Netball	35	7.93

Table-2: Prevalence of functional ankle instability

Functional Ankle Instability	Number	Percent
Yes	43	18.4
NO	191	81.6

DISCUSSION

Out of 441 athletes, 258 were males and 183 were females with 43 athletes have FAI (18.4%). 140 athletes (31.7 %%) were in the age group <20, 230 (52.2%) were in the age group 20-25 and 71 (16.1%) were in the age group above >25. The prevalence of FAI was seen most commonly in the age group 21-25 (26.4%).Males are more affected than females with a significant p value 0.048.It was found that body mass index has no impact in the prevalence to FAI and only the event participated by the athletes has a significant role in causing ankle sprains which further predisposes to FAI. The most common sports associated with FAI was football and hockey (34.5%), followed by basketball, handball (23.3%), volleyball, tennis, badminton (1.6%) and others including athletics, netball, kho-kho, kabadi, cricket(15.1%). Previous study by Arnold, reported 20-40% prevalence of ankle instability in collegiate sports [5]. Jyotsana Mehta and AGK Sinha found a higher prevalence of FAI (57.74%) among the

Punjab basketball players [6]. This may probably due to inadequate rehabilitation, bad technique, overtraining and competitive temperament by the athletes.

Table-3: factors influencing FAI

Variables		FAI Present		FAI Absent		Chi Square Test Value	P Value
		Number	Percent	Number	Percent		
Age	<20	4	5.7	66	94.3		
	21-25	32	26.4	89	73.6	12.86	0.002
	>25	7	16.3	36	83.7		
Sex	Male	29	23	97	77	3.918	0.048
	Female	14	13	94	87		
BMI	Underweight <18.5	5	10	45	90		
	Normal 18.5 – 24.9	37	21.5	135	78.5	4.273	0.118
	Overweight 25 – 29.9	1	8.3	11	91.7		
Event Participating :							
I-Football, Hockey		20	34.5	38	65.5		
II-Volleyball, Badminton, Tennis		1	1.6	62	98.4	23.23	0.000
III-Basketball.Handball		14	23.3	46	76.7		
IV-Others- Athletics, Kabadi, Kho-Kho, Netball, Cricket		8	15.1	45	84.9		

CONCLUSION

Functional ankle instability is one of the common causes of morbidity in the athletic population with considerable socio economic impact since it creates long term problems with high rates of recurrence. The evaluation of FAI is necessary in the athletes because many times correction of functional ankle instability is ignored. As balance forms the basis of motor skills from simple to more challenging in sports, correcting the FAI in athletes will improve their performance in sports. It is also important to educate athletes and the instructors regarding the need to identify FAI and to seek early medical care and rehabilitation for initial ankle injuries. These types of studies are needed to sensitize the community about the problem and to plan intervention.

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