



OCCURRENCE OF ANKLE INSTABILITY IN MALE FOOTBALL PLAYERS

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ABSTRACT

Background: Playing football requires many rotational movements at lowerlimbs joints i.e. hip, knee, as well as ankle. This can be because of rapid rotational movements, overuse, landing, sudden jerky movements, collision with the players and many other. While playing football movements especially twisting injuries, turning and rolling of foot are more common which lead to instability.

Aims and Objectives: To identify occurrence of ankle instability in male football players using valid clinical tests and to identify the severity of functional ankle instability using CAIT questionnaire.

Materials and Methodology:

A cross sectional observational study was conducted with a sample of 60 male football players between 15years-25years also male football players indulging in this sport for more than 1year of time were included in the study. Whereas participants with past history of lower limb injuries, congenital deformities, recent fractures and those involved in sports other than football which can cause ankle injury were excluded from the study. All subjects were selected by purposive type of sampling. The participants were recruited from local football clubs. All the participants who met the inclusion criteria further underwent clinical examinations in which tests determining ligament instability and postural stability were performed. Additionally a questionnaire determining severity of functional ankle instability was administered. All the above mentioned test were conducted at the football clubs itself.

Results: Occurrence of ankle instability in male football players is high.

Conclusion: The study concluded that there is high occurrence of ankle instability in male football players.

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INTRODUCTION

Ankle joint, is a synovial joint of the hinge variety. The upper articular surface is formed by the lower end of tibia including medial malleolus, lateral malleolus of fibula and inferior transverse tibiofibular ligament. These structures form a deep socket. Structurally, the joint is very strong. The stability of the joint is ensured by close interlocking of the articular surfaces, strong collateral ligaments on the sides and the tendons that cross the joint, four in front five behind. The joint is supported by fibrous capsule, the deltoid or medial ligament and lateral ligament^[1].

Football is the most popular sport in the world, while also being associated with a high injury rate both at professional and amateur levels^[2,3,4]. Elite soccer players experience between 13 and 35 injuries per 1000 competitive player-hours, with up to 74% resulting from direct player contact.

When cause is analysed approximately 80% are traumatic in origin and 20% are overuse injuries^[5,6].

Football is a competitive, physically challenging game requiring a wide range of attributes including explosive power, strength, agility, speed and physical and mental toughness. India is growing in football, special emphasis is made on immature footballers by various funded and non-funded organisation & India is going to organise U-17 FIFA worldcup. The sport has undergone many changes in recent years, mainly because of increased physical demands. These changes have led to an increased injury risk.

The incidence of injury in outdoor soccer has been reported in the literature, whereas there have been few studies on the injury rates of indoor soccer players. After the thigh, the feet and ankles are the most common locations for injury^[7]. Epidemiology, Regarding foot and ankle injuries, an epidemiologic study among 200 players of soccer on natural grass reported 66 severe ankle and foot problems (33%). The following injury mechanisms were reported^[8].

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Direct player-to-player contact (32.0%), Overuse (26.0%), Tripping on the grass (10.5%), Landing (7.5%), Jumping and jumping/landing (7.5%), Tackling (4.5%), Being tackled (4.5%), Shooting (3.0%), Kicking and kicking/shooting (3.0%), Sprinting (1.5%).

The incidence of foot and ankle injuries in elite soccer competition is estimated as between 3 and 9 injuries per 1000 player-hours of competition, and the dominant foot is most commonly injured^[9].

Several studies have described risk factors for injury in soccerplayers. Some studies recommend a differentiation between intrinsic (person-related) and extrinsic (environment-related) risk factors, which are defined as follows:

Intrinsic risk factors are the individual biological or psychosocial characteristics, such as joint flexibility (including pathologic ligament laxity and muscle tightness), functional instability, previous injuries, and inadequate rehabilitation.

Extrinsic risk factors include the amount of training and number of games played, climatic factors, pitch surface, playing field conditions (eg , dry, wet, uneven),equipment (eg, shin guards, taping, shoes), and the rules of the game and foul play. The most important extrinsic risk factor seems to be unfair play contact, which can cause approximately 23% to 33% of all injuries^[10].

Ankle sprains and ankle instability, Ankle sprains are the most common pathology accounting for up to 67% of all soccer related ankle injuries^[11]. In a typical sprain, forced ankle inversion-supination precipitates tearing of the ATFL to varying degrees ankle injuries in professional soccer players has shown that direct contact with a laterally directed force on the medial aspect of the lower leg just before or at foot strike can causes the player to land with the ankle in this vulnerable inverted position^[12]. Mechanical instability occurs when ligaments fail to remodel to normal length, allowing motion beyond normal physiological limits. The ankle joint capsule and soft tissues about the joint are often stretched or torn at the time of injury, disrupting the proprioceptive nerve fibers that run through them. This can produce a functional instability where the player may be mechanically stable but unable to maintain balance when in unilateral foot stance^[13]. Both mechanical and functional instability may be present independently or in combination in any player and if untreated can potentiate additional sprains and the development of chronic ankle instability^[14]. Clinical examination may be difficult in the immediate period following an acute injury^[15]. The anterior drawer and valgus stress test can be useful in the delayed or chronic setting, however, these tests have been shown to have limited sensitivity and significant variability in differing examiners hands^[16]. The modified Romberg test can demonstrate proprioceptive deficiencies of the ankle, indicating the presence of functional instability^[17].

Clinical tests selected for ankle instability are:
Anterior Drawer Test – Talofibular Ligament.
Talar Tilt Test – Calcaneofibular Ligament.
One Leg Stance Test.

CAIT Questionnaire, Hiller *et al.* designed the Cumberland Ankle Instability Tool (CAIT). It was originally developed in English and proved to be of high content validity and good reliability. The main advantage of the questionnaire is that it consists of only 9 items, minimizing patient burden and

increasing reliability^[18]. The CAIT is filled out for both the left and right ankle, making it possible to assess both ankles individually. The CAIT consists of nine questions with a total of 30 points possible, lower scores indicate more severe functional ankle instability^[19]. A score of less than or equal to 27 indicates a subject has FAI, whereas a score of 28 or higher indicates no FAI^[19,20].

Various injuries in football, however, incidence of ankle instability is not been well identified.

Ankle twist and instability can occur more on Indian grounds because of uneven surfaces and due to competitive nature of players. This injury has been ignored by most the players & thus goes into denial phase. This study will help medical team of football to identify the risk of ankle instability in footballers and since there is dearth of literature regarding incidence of ankle instability.

Hence the broad aims of this study is to assess occurrence of ankle instability in male football players.

MATERIALS AND METHODS

60 male football players from the metropolitan city with the age between 15 –25years, were recruited.

Inclusion criteria:1. Male football players willing to participate. 2. Age 15years-25years. 3. Players playing for more than a year.

Exclusion criteria:1. Players with any previous lower limb injury. 2.Congenital deformities. 3. Recent fractures. 3. Those involved in sports other than football which can cause ankle injury

Prior to the study a written consent form was taken from each subject in the language best understood to them.

Study Design: In this occurrence study the sample size was 60. Type of study was cross-sectional and type of sampling was purposive.

Procedure: Subjects will be selected on the basis of Inclusion and Exclusion criteria.

The written informed consent will be taken and the subjects will be explained in detail about the procedure. Demographic data will be collected. CAIT Questionnaire will be administered to all participants & scores will be recorded. Make the patient comfortable. Clinical tests will be performed, which will include:

Anterior drawer test for ankle (ligament instability)

Position of patient: High sitting

The therapist grasp the patient's foot at heel and pull forward while maintaining the tibia in a fixed position with the other hand at the anterior distal tibia. Translation greater than 3mm or difference in anterior translation from the asymptomatic ankle suggests the tear of the ATFL (Anterior Talofibular Ligament).

Talar Tilt Test

Patient position: High sitting

Patient seated with foot ankle unsupported. The foot is positioned in 10-20 degrees of plantarflexion. The distal lower leg is stabilized with one hand just proximal to the malleoli

and the hindfoot is inverted with other hand .the lateral aspect of the talus is palpated.

One-Legged Stance Test (postural stability)

To perform the test, the patient is instructed to stand on one leg without support of the upper extremities or bracing of the unweighted leg against the stance leg. The patient begins the test with the eyes open, practicing once or twice on each side with his gaze fixed straight ahead. The patient is then instructed to close his eyes and maintain balance for up to 30 seconds^[29]. The number of seconds that the patient/client is able to maintain this position is recorded. Termination or a fail test is recorded if 1) the foot touches the support leg; 2) hopping occurs; 3) the foot touches the floor, or 4) the arms touch something for support.

RESULTS

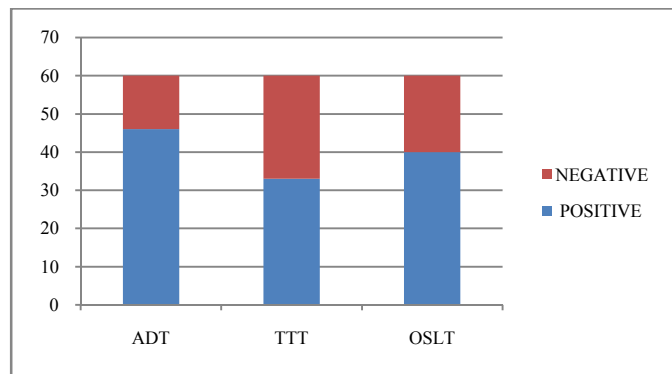
Demographic Data

	Subjects
Sample size	N=60
Mean age (years)	22
Range	15-25 YRS

In This Study Age Group Of Subjects Were Ranging From 15-25 Yrs With Mean Age Being 22 Years.

Table 1 Findings of clinical tests

	Anterior Drawer Test	Talar Tilt Test	One legged Stance Test
Positive findings	46	33	40
Negative findings	14	27	20

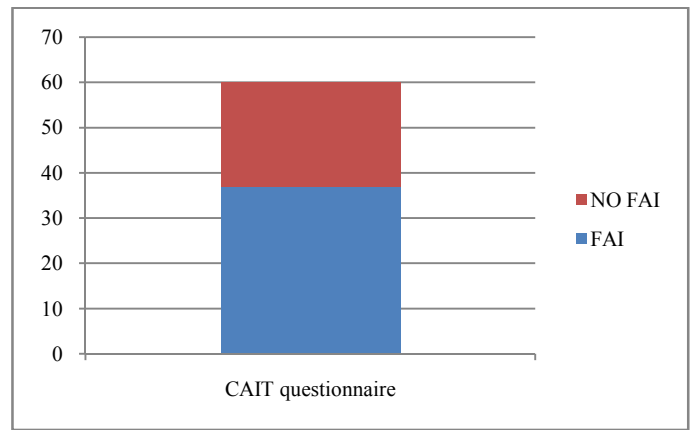


Inference: The above data states that 47 out of 60 cases were found to be positive for Anterior drawer test, 33 out of 60 cases were found to be positive for Talar tilt test and 40 out of 60 cases were found to be positive for one legged stance test.

Table 2 Findings on cait Questionnaire:

CAIT	Number of individuals
FAI (<27)	37
NO FAI (>27)	23

Inference: CAIT questionnaire was administered and results demonstrated that 37 individuals had functional ankle instability.



Graph 1

DISCUSSION

Football is a competitive, physically challenging game requiring a wide range of attributes including explosive power, strength, agility, speed and physical and mental toughness. India is growing in football, special emphasis is made on immature footballers by various funded and non-funded organisation & India had organised U-17 FIFA Worldcup.

Football is the most popular sport in the world, while also being associated with a high injury rate both at professional and amateur levels. Elite soccer players experience between 13 and 35 injuries per 1000 competitive player-hours, with up to 74% resulting from direct player contact. When cause is analysed approximately 80% are traumatic in origin and 20% are overuse injuries.

This study assessed the occurrence of ankle instability in male football players. This study was done on a sample size of 60 male football players.

The data states that 83.33% .i.e. 50 out of 60 individuals from the sample were having mechanical ankle instability (subjects positive for atleast two clinical tests were considered to be having mechanical ankle instability);76.66% of the population were positive for anterior drawer test; 55% were positive for Talar tilt test and 66.66% were positive for one legged stance test.

Mechanical ankle instability refers to anatomical insufficiencies such as pathological laxity, and arthrokinematics and other causes. Hence to rule out false positive outcomes for mechanical ankle instability, CAIT questionnaire was administered to find out the severity of functional ankle instability. Out of the total sample size, 66.66% were found to be having functional ankle instability .i.e. 40 out of 60 individuals.

The study shows 66.66% of the individuals found to be having functional ankle instability and 33.34% having no functional ankle instability using CAIT questionnaire.

Tropp *et al* found increased postural sway, measured using stabilometry, in participants with both perceived ankle instability and recurrent sprain compared with external controls. Both Konradsen and Ravn and Ryan found differences in postural sway between external controls and participants with either perceived ankle instability alone or perceived ankle instability in combination with mechanical instability.

Hence our study concludes that there is high occurrence of ankle instability in male football players.

CONCLUSION

The study concludes that there is high occurrence of ankle instability in male football players ranging from the age 15 to 25yrs and involved in football for more than a year.

Clinical Implications: Help the Medical team of football to identifying the risk factors & training them according to it, so that to avoid further injuries and instability.

Limitations And Suggestions: Limitations: 1.The study was performed over a small sample size; 2. study was conducted in a metropolitan city.

Suggestions: 1. Largesample size can be used; 2. Study can be conducted on rural as well as urban population.

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Conflicts of Interest: None

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