



Assesment of functional movement screen to predict injuries in young footballers

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Abstract

We aimed to investigate whether to assess injured young football players using functional movement screening (FMS). That will acknowledge any significant risk factors for a recurrence of injury or other future injuries. 43 state-based young football players (male: n = 27, age = 23.14; female: n = 16, age = 21.31) participated in this survey. Before the game started, the FMS screen was performed. The mean FMS score for all football players was 13.8 ± 2.81 . The findings of this study demonstrated that an FMS score of 14 is an identifiable risk factor for injury in young football players. Subject with injured body region shows readings of 19% ankle, 32% knee, 26% hip, 14% trunk, 2% shoulder, 2% elbow, and 5% neck.

Keywords: functional movement screen, football, injured players

Introduction

In terms of the number of participants and spectators, football is the most popular ball game in the world. Now played on all continents in over 200 countries with over 250 million players. The sport can be played almost anywhere, from official football playing fields (pitches) to gymnasiums, streets, school playgrounds, parks, and beaches. It has simple rules and basic equipment^[1].

Football players in high-impact contact sports might suffer both immediate and long-term effects from injuries^[2]. All injuries were sustained in the lower extremities, with knee injuries accounting for up to 36%. Upper extremity injuries accounted for 30%. In general, sprains and strains account for 40% of injuries, contusions 25%, fractures 10%, concussions 5%, and dislocations 15%. The lumbar spine is more susceptible to injury when subjected to repeated flexion, extension, and torsional stresses. Training and control of pain are two components of rehabilitation. By minimizing stress at the intervertebral joint, the training phase aims to prevent repetitive injuries.

Functional movement screen tool, which is used to calculate seven basic patterns of movement in individuals without any pain complaint or musculoskeletal injury. A fundamental movement pattern is a simple action that is used to assess range of motion, stability, and balance simultaneously. To properly perform the seven basic movement patterns in the test, you need muscle strength, flexibility, range of motion, coordination, balance, and proprioception^[3]. Seven movement patterns that compensate the FMS require both flexibility and stability. The movement screen consists of 3 functional movement patterns, 2 mobility-testing postures, and 2 core-stability-testing movement patterns. Deep squat, hurdle line, in-line lunge shoulder mobility, active straight leg raise, rotary stability, and trunk stability push-up sub-tests, as well as with the overall FMS score^[4].

Material and methods

The percentage of participants in this study is 50 footballers they were involved voluntarily, and out of those, 43

unhealthy footballers were included according to inclusion and exclusion criteria. The samples were collected by a convenient sampling method as the target population was young footballers of the age range of 18–30 years, and both males and females were included. Each injured football player is assessed with outcome measures, i.e., a functional movement screen test. A total of 43 football players (Males: n = 27, age = 23.14 years; Females: n = 16, age = 21.31 years) participated. All were members of different football teams or clubs and had 1.5 to 2 years of experience. They were all 18–30 years old. All participants regularly trained for three to four sessions of 2 hours per week. To find out the interpretation of the screening test in injured football players using the functional movement screening test.

Players with any neurological impairments, visual and vestibular disorders, cognitive conditions other than orthopedic conditions and any recent fracture or surgical procedure, and Participation was restricted for individuals who missed more than three training sessions per month. Before joining the participants for research participation, the project's goal, possible risks, advantages, and method were all thoroughly communicated to them. Each participant, as well as the coaches and coordinators of their teams or clubs, provided written informed consent. The demographic data and details on the history of injuries were recorded by one individual who had one year of experience and was certified in the administration of the FMS screen. Players were assessed, and the results were recorded. The deep squat, in-line lunge, hurdle step, shoulder mobility, active straight-leg raise, trunk stability push-up, and rotary stability were included in the seven FMS screens. Each of the seven fundamental movement pattern tests gets a score between 0 and 3 based on the FMS criteria. Each participant was provided a composite score out of a possible 21 points.

Result

Football players from teams voluntarily participated in the study. A total of 43 participants were included (27 male and 16 female), age range 18-30 years old, mean age was $22.4 \pm$

3.50. The mean FMS composite score for all the participants was 13.8 ± 2.81 .

Number of injuries of footballers according to body region is represent in table no 1, were out of 43 footballers 19% footballers had ankle injuries, 32% knee injuries, & 26% footballers had hip injuries, 14% footballers had trunk injuries, 2% footballers had shoulder injuries, 2% footballers had elbow injuries and 5% footballers had neck injuries.

Table 1

Body region	Percentage%
ankle	19%
knee	32%
hip	26%
trunk	14%
shoulder	2%
elbow	2%
neck	5%

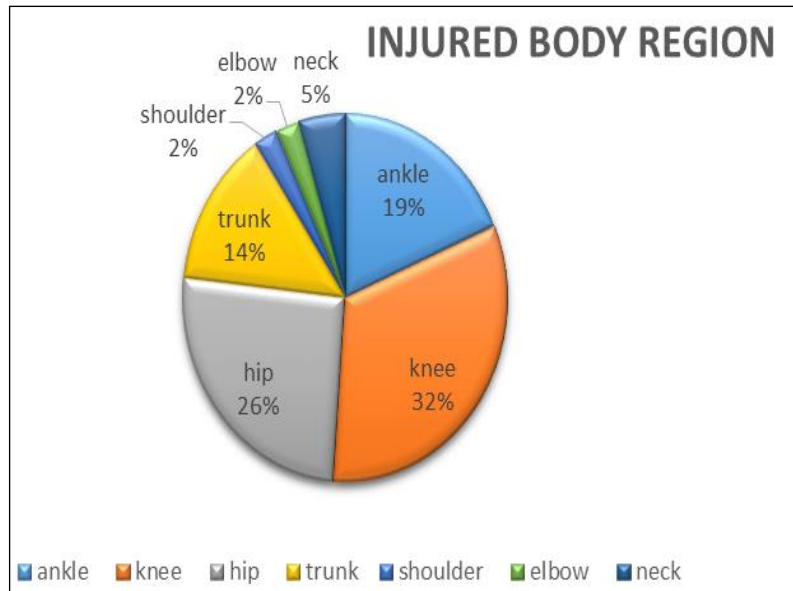


Fig 1: Summary of injuries by body region

Interpretation

See Figure 1, shows that out of 43 subjects. Subject with injured body region shows reading as 19% ankle, 32% knee, 26% hip, 14% trunk, 2% shoulder, 2% elbow and 5% neck. In table no.2, shows that males injured footballers have FMS score as 15 footballers below 14 & 12 footballers

above 14, whereas females showed 10 footballers below 14 & 7 footballers above 14, therefore table no.2 interpreted that 15 male injured footballers and 10 females injured footballers were more prone to increased risk of injured.

Table 2

Gender	FMS Score	
	Male	Below 14
	Above 14	12
Female	Below 14	10
	Above 14	7

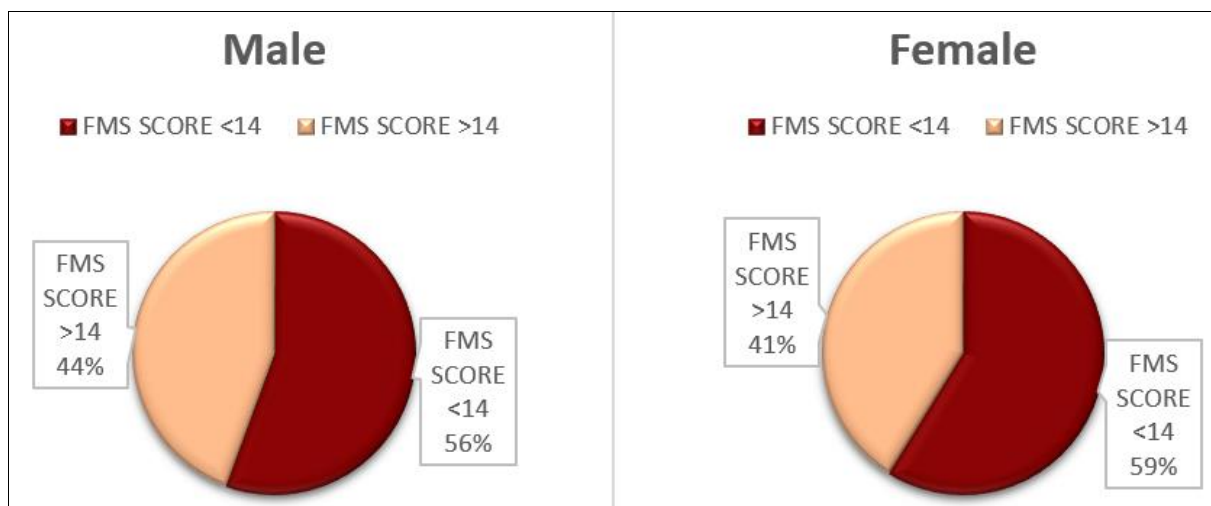


Fig 2: Score of male and female injured young football players who scored above or below 14 points on the functional movement screen

Interpretion

See figure 2, shows this study male or female injured football player were included FMS TEST score was below 14.

Discussion

All participants were adherent to this study throughout. Different sports club were approached in and around Pune. Aim and objectives were explained to the participants, the subjects were informed of the type of research being conducted.

Approximately 200 million players globally participate in football year-round, which puts a large number of players at an increased risk of injury. As a result, in addition to physical measurements, another important criteria is the determination of neuromuscular impairments. To assess asymmetries, dysfunctions, and compensatory movement patterns in athletes, the FMS is a valuable screening tool. The FMS was created to assess basic motions, which can

indicate if an athlete has the correct stability and mobility. The goal of this study was to examine the FMS's predictive performance in identifying young football players who will suffer injuries [5].

In table no 3, Out of 43 injured footballers 27 male footballers showed result for Mean ± standard deviation (SD) FMS component as followed; Deep squat (1.85 ± 0.60), Hurdle step (1.81 ± 0.62), In-line lunges (1.85 ± 0.36), Shoulder mobility (2.55 ± 0.64), Active straight leg raise (2.11 ± 0.50), Trunk stability push up (2.29± 0.60), Rotatory stability (1.37± 0.74), Total FMS composite score of males is (13.9± 2.89). And that for female footballers showed result for mean ± standard deviation (SD) of FMS component is as followed Deep squat (2 ± 0.51), Hurdle step (1.93 ± 0.44), In-line lunges (1.87 ± 0.50), Shoulder mobility (2.5 ± 0.51), Active straight leg raise (1.87± 0.61), Trunk stability push up (2 ± 0.63), Rotatory stability (1.5 ± 0.81), Total FMS composite score of females is (13.6 ± 2.77).

Table 2

Variable	Mean ± SD	Range
Both male and female		
Age(years) (N=43)	22.4 ± 3.50	18-30
Deep squat (N=43)	1.90 ± 0.57	0-3
Hurdle step (N=43)	1.86 ± 0.55	0-3
In-line lunge (N=43)	1.86 ± 0.41	0-3
Shoulder Mobility (N=43)	2.53 ± 0.59	0-3
Active straight-leg raise (N=43)	2.02 ± 0.55	1-3
Trunk stability push up (N=43)	2.18 ± 0.62	0-3
Rotatory stability (N=43)	1.41 ± 0.76	0-3
FMS composite score (N=43)	13.8 ± 2.81	6-21
Male		
Age(years) (N=27)	23.14 ± 4.01	18-30
Deep squat (N=27)	1.85 ± 0.60	0-3
Hurdle step (N=27)	1.81 ± 0.62	0-3
In-line lunge (N=27)	1.85 ± 0.36	0-3
Shoulder Mobility (N=27)	2.55 ± 0.64	0-3
Active straight-leg raise (N=27)	2.11 ± 0.50	1-3
Trunk stability push up (N=27)	2.29 ± 0.60	0-3
Rotatory stability (N=27)	1.37 ± 0.74	0-3
FMS composite score (N=27)	13.9 ± 2.89	6-21
Female		
Age(years) (N=16)	21.31 ± 2.02	18-25
Deep squat (N=16)	2 ± 0.51	0-3
Hurdle step (N=16)	1.93 ± 0.44	0-3
In-line lunge (N=16)	1.87 ± 0.50	0-3
Shoulder Mobility (N=16)	2.5 ± 0.51	0-3
Active straight-leg raise (N=16)	1.87 ± 0.61	1-3
Trunk stability push up (N=16)	2 ± 0.63	0-3
Rotatory stability (N=16)	1.5 ± 0.81	0-3
FMS composite score (N=16)	13.6 ± 2.77	6-21

Interpretion

See table no.3 shows that functional movement screen composite scores for both male and female (13.8 ± 2.81) and male (13.9 ± 2.89) and female (13.6 ± 2.77).

A screening test by definition is intended for asymptomatic population to identify those in need of further assessment. The purpose of FMS is to determine if a subject has any movement's deficiencies, symmetrical disparity if present, subject is prone to have increased risk of injury [6].

Female athletes in healthy secondary schools scored 14 or less on the FMS total composite score, which is

significantly lower than male athletes in healthy secondary schools. This suggests that female athletes in healthy secondary schools may be more likely to get hurt. Deficits in mobility, core stabilization, and coordinated movement patterns may all increase the risk of injury. When using the FMS and creating programs to prevent injuries, clinicians should be aware of potential gender differences [7].

Due to the time difference between the player's game and the research's time, a bigger sample size wasn't utilized in the study. Research may be done to find functional movement screen in various sports.

Conclusion

The present study concludes that knee 32%, hip 26%, ankle 19% and trunk 14%. According to the Functional Movement Screen (FMS), both male and female football players suffered injuries at a prevalence of 58%.

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