Original Article

Efficacy of FIFA 11+ Training Program on Performance and Functional Movement in Collegiate Football Players

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Abstract

Background: Football is the most common sport played around the world with 300 million registered players. To decrease injury rates and promote fair play in football, the FIFA-Medical and Assessment Research Centre designed the FIFA 11+ training program.

Purpose: The aim of this study was to investigate the effect of FIFA 11+ training program on functional performance and functional movement in collegiate football players.

Materials and Methods: A total of thirty subjects were chosen. Fifteen adult male football players were randomly assigned into one of two groups: Group A (traditional training) or Group B (FIFA 11+ training). Both the groups received the training for six weeks. And to check the performance speed was calculated using a 20m sprint test and aerobic capacity was measured using treadmill test. To check the functional movement FMS score was measured.

Results:A Pearson correlation test shows a positive correlation ($r = 0.208$) but the weaker relationship between the variables. Paired t test analysis shows a significant improvement after the treatment in terms of Gluteus Maximus muscle activity, Hamstring muscle length and pain reduction with a P value < 0.001.

Conclusion: This study concluded that FIFA 11+ training programs were better than the conventional training program in terms of functional performance, functional movement, and injury prevention. This was attributed to the effect of the program on stability, muscle strength, proprioception, and postural alignment, which makes it a better training program for preventing injuries.

Key Words: Football, FIFA 11 + training, functional movement, performance, aerobic capacity, speed, FMS.

Introduction

Football is the game which is played widely among the world. There are approximately around 300 million players across the globe.(1) In India, football is among the three most popular sports. As the sport is gaining popularity, there is a need to study how proper training can improve player effectiveness and performance". After a number of studies the FIFA- Medical and Assessment Research Centre (F-MARC) developed a training program called as FIFA 11+ training program in order to promote football and to increase the performance of the players.(2) It primarily focuses on improving

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neuromuscular coordination, posture and body control. This program consists of specified warm up protocol, neuromuscular, cardiovascular training.

Numerous studies have been performed to determine whether the FIFA 11+ training program is effective at preventing injuries. The program was initially tested on young Norwegian female soccer players, and it was found that it reduced the injury rate in half. Also, it reduced time losses by 28% and the injury rate by 46%. A study conducted by AlvinaNawed et al. shows that FIFA 11+ training is effective in improving the sport performance in football players.[1]

The The aim of functional movement screening (FMS) is to screen individuals for any indications of injury risk and dysfunctional patterns of movement. The FMS is a tool used to identify asymmetries that result in limitations in functional mobility.[8] The FMS looks for mobility and stability abnormalities during seven basic movement patterns. In extreme positions where deficits and imbalances may be present, these movement patterns are intended to offer fundamental locomotor, manipulative, and stabilizing movements.

In a survey, Shojaedin et al. (2014) explored the relation between the onset of injury and FMS score and revealed the FMS's predictive value for injuries12. Based on their findings, a player who scored less than 17 on the FMS had a nearly 4.7 times increased likelihood of having a lower extremity injury during a typical competitive season. Additionally, they had recruited players for handball, basketball, and football and had given the FMS reference value for all the college players. In the study conducted by, Lee et al. (2018) showed the FMS to evaluate high school baseball players' preparatory and comparative periods8, and they discovered that each score of the event and overall composite scores of the entire event were significantly higher during the comparative period.[1,2]

For the performance aspect aerobic capacity is measured using the Vo2 max test and speed by 20m sprint which is used in most studies and power by vertical jump test[2]. Thus, the focus of this study is to find whether the FIFA 11+ training program provides any effect on the functional performance of collegiate male football players.[3, 4, 5]

The FIFA 11+ training program stands as a shining example of evidence based injury prevention in the world of soccer. Its comprehensive warm up components and targeted exercises address the specific risk factors associated with lower extremity injuries, effectively reducing their occurrence among players. Supported by scientific research and embraced by soccer communities globally, the FIF 11+ has revolutionized warm up practices, making the sport safer and more enjoyable for players of all age and skill levels.

To the best of the authors' knowledge, no reports were published to determine the effects of the FIFA 11+ training program on the FMS scores of young football players among the Indian population despite the growing interest in the use of the FMS within sporting development programs[6]. Therefore, the purpose of the current study was to determine how the six-week FIFA 11+ training program affected teenage football players' FMS scores.

Aim

The aim of this study was to investigate the effect of FIFA 11+ training program on functional performance and functional movement in collegiate football players.

Materials and Methodology

A total of thirty subjects were chosen. Fifteen adult male football players were randomly assigned into one of two groups: Group A (traditional training) or Group B (FIFA 11+ training). Both the groups received the training for six weeks. And to check the performance speed was calculated using a 20m sprint test and aerobic capacity was measured using treadmill test. To check the functional movement FMS score was calculated.

Inclusion criteria:

- Football players who are in the aged 18 to 25
- Only male players are included
- Players who have at least 2 years of experience

Exclusion criteria:

- Players with a history of surgeries in extremities and spine.
- Players with recent musculoskeletal injuries.

Outcome Measures:

- Aerobic capacity
- Speed
- Power
- Functional movement screening.

Procedure

Total of 30 male players were included in the study from Saveetha institute of medical and technical sciences aged 18 to 25. Players who are continuously into the game for more than two years were included into the study. Players who are injured recently and who are in off-season were excluded. Then they were randomly divided into two groups, one group continued with their regular training and the other experimental group were asked to follow the FIFA 11 + training program.

The following physical performance tests were executed out by the participants prior the 12-week intervention in the mid-season: Speed is measured with a 20-meter sprint run test, aerobic capacity has been measured by a treadmill test involving the Vo2max, and FMS.

These tests are under the most often used football tests for maintaining records on football players. The best results from each performance test were used in the analysis after each test was run three times. Following the pretest, participants in the control group were told to go on with their regular training, which includes jogging as usual, ball exercises, and whole-body stretches, and participants in the experimental group followed the FIFA 11+ training. Five times per week, on various days, exercises were employed throughout the entire training program. The training period for the control group was the same (20–25 minutes) as the training period for the experimental group.

The FIFA 11+ training program has fifteen exercises that are grouped into three categories: 1) Slow-paced running combined with stretching and partner contacts. 2) Core strength training, balance training, plyometric, agility drills, and hamstring training which are performed at six sets and increasing difficulty in three levels. 3) Running from moderate phase to high and football-specific movements includes quick change in direction. The post-test was completed after the 8-week training course.

Data Analysis

All the obtained values are taken, the Functional movement screening (FMS) was calculated by the summation of all the values of all the tasks. For the aerobic capacity, vertical jump test and 20m sprint test the values of Vo2 max, height in centimeters and the time were calculated in seconds respectively, the mean and standard deviation values of pre and post-test values of both traditional training group and FIFA 11+ training group are calculated. Pre and post-test values were compared using paired t test within the group and post-test values of traditional training group and FIFA 11+ training group were compared using unpaired t test. The t values and p values were obtained. The following tables show that the post-test values were less than 0.0001.

Results

Table 1: Functional movement screening (FMS) for two groups, Group A and Group B

		Mean	SD	t value	p value
Group A	Pre test	12.20	1.26	3.555	0.0032
	Post test	12.93	1.16		
Group B	Pre test	12.07	1.22	13.55	<0.0001
	Post test	19.07	1.87		

Table 2: Aerobic Capacity assessment for Group A and Group B

		Mean	SD	t value	p value
Group A	Pre test	53.15	2.47	0.495	0.6282
	Post test	53.40	1.80		
Group B	Pre test	54.07	3.01	12.63	<0.0001
	Post test	63.00	2.24		

Table 3: Vertical Jump Test for Group A and Group B

		Mean	SD	t value	p value
Group A	Pre test	44.2	3.10	2.561	0.0226
	Post test	45.2	2.46		
Group B	Pre test	45.3	3.13	18.59	<0.0001
	Post test	67.3	2.44		

Table 4: 20m sprint test for Group A and Group B

		Mean	SD	t value	p value
Group A	Pre test	4.246	1.51	0.973	0.3470
	Post test	3.856	0.10		
Group B	Pre test	3.856	0.11	12.65	<0.0001
	Post test	3.174	0.16		

Discussion

This study is to find the effects of the FIFA 11+ training program on performance and functional movement in football players. The outcomes showed enhancements in vertical jump capability, sprinting process, aerobic capacity and FMS in male collegiate football players after participating in 8 weeks of the program.

In recent years, the importance of injury prevention and athlete welfare has garnered significant attention, not only in professional sports but also at the grassroots level. Recognizing the need for a structured and evidence-based approach to minimize injuries and optimize performance, FIFA introduced the FIFA 11+ training program. Developed by experts in sports medicine, this program aims to reduce the risk of common injuries in soccer players. This study derives into the FIFA 11+ training program, its key components, effectiveness, and impact on player performance.

The study's findings show that each group's FMS score at the pretest stage was less than 14. Studies before showed that the fewer scores of FMS are more prone to injuries[14]. As one of the important aspects is to prevent injuries, the post stage shows that there is an increase in the FMS score than the pre test stage. Accordingly, the FMS score consists of up to seven fundamental movement tasks, and each test's scores could have been affected by player body mobility, stability, and movement pattern. The FIFA 11+ training program consists of a wide range of exercises which focuses on improving the stability of the core, muscle training, proprioceptive training, agility drills, stability and plyometric drills.

The most likely explanation for improvements in speed, aerobic capacity and strength is due to the stronger muscles. Various football activities such as kicking, accelerating, decelerating, cutting, etc. depend on the hamstring and quadriceps[15]. Workouts from the FIFA 11+ such as vertical jump, box jump, single leg squat, which mainly focuses on improving hamstring and quadriceps muscular strength which shows improvements in strength, speed and agility as

these exercises improve the strength, neuromuscular recruitment and movement coordination.

The study concludes that the FIFA 11+ training program is better than the traditional training and has shown better improvements in the performance and the functional movement. Further study may be done based on different age groups of players and with a large number of sample sizes and also with other gender players.

Conclusion

According to the study's results, conventional and FIFA 11+ training programs enhanced scores of the FMS, aerobic capacity, and speed, each corresponding towards better functional performance and a lower chance of injury. However, FIFA 11+ was better than the conventional training program in terms of functional performance, functional movement, and injury prevention. This was attributed to the effect of the program on stability, muscle strength, proprioception, and posture, which makes it a better training program for preventing injuries.

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References

1. Ardern CL, Ekås GR, Grindem H, Moksnes H, Anderson AF, Chotel F, et al. Committee consensus statement on prevention, diagnosis andmanagement of paediatric anterior cruciate ligament (ACL) injuries. BritishJournalofSportsMedicine. 2018;52:422–38.
2. Barengo NC, Meneses-Echávez JF, Ramírez-Vélez R, Cohen DD, Bautista JE. The impact of the FIFA 11+ training program on injury prevention in football players: a systematic review. International journal of environmental research and public health. 2014;11(11):11986–2000.
3. Bizzini M, Dvorak J. FIFA 11+: an effective programme to prevent football injuries in various player groups worldwide-a narrative review. British journal of sports medicine. 2015 May 49(9):577–9
4. Effects of a periodized functional strength training program(FST) on Functional Movement Screen (FMS) in physical education students.2020 Jun 30: 24:162–7.
5. Harøy J, Thorborg K, Serner A, Bjørkheim A, Rolstad LE, Hölmich P, et al. Including the Copenhagen adduction exercise in the FIFA 11+ provides missing eccentric hip adduction strength effect in male soccer players: a randomized controlled trial. The American journal of sports medicine. 2017;45:3052–9.
6. Jafarnezhadgero A, Sorkhe E, Meamarbashi A. Efficacy of motion control shoes for reducing the frequency response of ground reaction forces in fatigued runners. Journal of Advanced Sport Technology. 2019;3(1):8–21.
7. Lee CL, Hsu MC, Chang WD, Wang SC, Chen CY, Chou PH, et al. Functional movement screen comparison between the preparative period and competitive period in high school baseball players. J ExercSci Fit [Internet]. 2018;16(2):68–72. Available from:http://dx.doi.org/10.1016/j.jesf.2018.06.004
8. Lloyd RS, Oliver JL, Radnor JM, Rhodes BC, Faigenbaum AD, Myer GD. Relationships between functional movement screen scores, maturation and physical performance in young soccer players. J Sports Sci [Internet]. 2015;33(1):11–9. Available from: http://dx.doi.org/10.1080/02640414.2014.918642
9. Naweda K, Muaidi QI. EfficacyofFIFA11+training program on functional performance in amateur male soccerplayers. Journal of Back and Musculoskeletal Rehabilitation. 2018 Jan 1: 31(5):867–70.
10. Rabiei M, Qasemi B, Abbassi M. The effect of the eight-week FIFA 11+ injury prevention program on adolescent footballers' functional movement screen scores. Journal of Advanced Sport Technology. 2021;5(2).
11. Reis I, Rebelo A, Krustrup P, Brito J. Performance enhancement effects of Fédération Internationale de football association's "the 11+" injury prevention training program in youth futsal players. Clin J Sport Med [Internet]. 2013;23(4):318–20. Available from: http://dx.doi.org/10.1097/JSM.0b013e318285630e.