Available online at ijci.wcci-international.org

International Journal of Curriculum and Instruction 14(3) (2022) 2304- 2315

IJCI
International Journal of Curriculum and Instruction

The effect of FIFA 11+ training program on selected parameters in athletes

Halit Egesoy [a] *, Hayrettin Gümüşdağ [b]

[a] *Pamukkale University / Faculty of Sports Sciences / Denizli 20160, Turkey*

[b] *Bozok University / Faculty of Sports Sciences / Yozgat 66100, Turkey*

Abstract

There is a training protocol called 'FIFA 11+' recommended by the International Football Associations Association (FIFA) and the Turkish Football Federation (TFF) to football teams. This protocol is defined as a warm-up program used to prevent injuries in athletes. This program includes 3 parts. The first part consists of running exercises, the second part consists of exercises that improve strength, balance, muscle control and trunk stabilization, and the third part consists of advanced running exercises. The aim of this research is to determine the effect of the FIFA 11+ training program applied to young football players on selected parameters. In the U14 league category, 19 male football players who played licensed in an amateur football team (Age: 13.8 ± 0.05 years; Height: 167.25 ± 0.06 cm; Body weight: 57.59 ± 12.3 years) kg) participated voluntarily. Height and body weight measurement, 10-minute warm-up run and 20 m sprint test were performed on the athletes, respectively, on the 1st day. On the second day, a 10-minute warm-up run, reach and vertical jump tests were performed, respectively. After the applied tests, the athletes were randomly divided into two groups as experimental and control groups. Control group athletes applied the dynamic warm-up program determined in their routine training programs, and experimental group athletes applied the FIFA 11+ training program 2 days a week for 6 weeks in addition to their routine training programs. At the end of the 6th week, the previous measurements were made in the same way and the study was terminated. Shapiro-Wilk and T tests were used in the analysis of the data. According to the research findings; It was determined that the FIFA 11+ training program applied to the football players had a statistically significant effect on the jumping and flexibility performances of the athletes ($p<0.05$). In addition, it was determined that the program applied had an effect on the other performance parameters of the athletes, but this was not at a significant level ($p>0.05$). As a result; It is recommended that the FIFA 11+ training program applied to football players should be included in the training programs in order to contribute to the jumping and flexibility performances of the athletes.

Keywords: Athlete; football; FIFA 11+ training program; performance

* Corresponding author name. ORCID ID.: https://orcid.org/ 0000-0003-1347-8647
E-mail address: hegesoy1@hotmail.com

1. Introduction

1.1. Introduce the problem

Football is considered to be a branch of sports played by combining intermittent movements in motion analysis (Erol, & Arabacı, 2021). Elite performance in sports requires improved athletic performance, which includes physical and anthropometric characteristics. Managers, coaches and coaches who are in decision-making bodies in sports have to develop and implement certain protocols to improve the performance of athletes and prevent their injuries.

FIFA 11+ is a program developed to reduce athlete injuries in football players and promote the understanding of 'fair play'. This program is supported by the FIFA Center for Medical Evaluation and Research (F-MARC) and other Sports Medicine Institutions (Oslo Sports Trauma Research Center and Santa Monica Orthopedic and Sports Medicine Research Foundation, etc.), which was designed in collaboration with and is defined as an evidence-based warm-up program with the purpose of preventing and decreasing the number and severity of football-related injuries, especially in amateur athletes (Bizzini et al., 2011).

The FIFA 11+ training program takes approximately 20-25 minutes. This program contains three parts. In the first part, there is an 8-minute jogging. The second part consists of 6 exercises that improve strength, balance, muscle control and trunk stabilization with time duration of 15 minutes. The final part contains speed running mixed by bounding, planting and cutting activities. This part takes 2 minutes. This warm-up program takes a total of 20 minutes and contains 27 exercises. In addition this program contains running, strength, plyometric and balance exercises. While implementing this program the coaches need to focus on cutting, jumping and landing activities (Bizzini et al., 2011).

Based on the research of independent experts, FIFA states that injuries are reduced by 30-50% in teams that consistently implement the "11+" program, and conducts training and promotional activities in all countries to ensure that this program is widely used in football training programs (Fuller et al., 2011; Junge et al., 2011).

In these studies, two different views have been put forward. In the first of these opinions, it is claimed that the FIFA 11+ program applied to both male and female football players is effective in reducing the lower limb injury rates of athletes (Owoeye et al., 2014; Steffen et al., 2013).

Scientific research has shown that the incidence of injuries in athletes can be reduced by preventive programs. According to Soligard et al.,. (2008) and in a study conducted by Steffen et al., (2013), the FIFA 11+ program was applied to female football between the ages of 13 and 18 2 times a week. According to the results of the research, it was found that there were significant decreases in the incidence of injuries in female football

players (up to 50%). Owoeye et al. (2014) In their study, they reported a significantly lower (about 40%) proportion of injury in Nigerian male athletes aged 14-19 years. In addition, Silver et al., (2014) applied the FIFA 11+ program to American men's NCAA Division I and II football players 2-3 days a week and found similar results.

The second opinion is based on the fact that FIFA 11+ is a comprehensive warm-up program consisting of 15 exercises and lasting a total of 15-20 minutes (Rössler et al., 2014). This program may be considered very comprehensive, but when it is applied to athletes, it can be said to be very effective in preventing athlete injuries.

However, the fact that FIFA 11+ can be implemented as a warm-up program before training and competition is associated with the fact that it can have acute positive effects on the athletic performance of athletes.

According to Bizzini et al. (2013) in their study, they analyzed the acute effects of FIFA 11+ on some performance parameters of athletes. In this study, it was revealed that there are significant improvements in the 20 m sprint, jump and agility performances of athletes.

On the other hand, there are studies in the literature that do not show significant effects of FIFA 11+ on some physical performance parameters of athletes. Although no significant effects were observed in these studies, it was nevertheless revealed that there were some improvements in the performance of athletes (Daneshjoo et al., 2012; Steffen et al., 2013; Impellizzeri et al., 2013).

In a study conducted by Steffen et al., (2008), the FIFA 11+ program was applied on young female Norwegian players, and it was found that this program did not have significant effects on athletes' injury prevention.

The FIFA 11+ program should be taken into account in terms of showing positive chronic effects on the physical performance values of athletes. This information can be used as another powerful reason to encourage coaches to implement this injury prevention program in their daily football training routines.

Looking at the relevant literature, it has been seen that there are not enough studies examining the impact of the FIFA 11+ program on the performance parameters of young players. Therefore, he may think that the findings of this study will be significant for contributing to the literature. In the light of the above information, the purpose of our research is to investigate the effect of the FIFA 11+ training program applied to young football players on the selected parameters.

2. Methods

The research was carried out in accordance with the Principles of the Declaration of Helsinki, but ethics committee approval was not obtained because it was not experimental and only training practice.

2.1. Participant (subject) characteristics

Nineteen healthy male soccer players (age: 13.8- 0.05 years; height: 167.25- 0.06 cm; weight: 57.59-12,3 kg) who played sports under license in an amateur football team in the U14 league category voluntarily participated in the study.

The players had no history of musculoskeletal injury, such as shoulder, ankle, knee, or hip joint injuries in the past one year, and they did not take any dietary supplements that may have potentially affected the outcomes of this study. The satisfaction of the inclusion criteria was confirmed based on a health history questionnaire. The participants were given a detailed explanation regarding the purpose and procedure of this study. In addition they have parent' permission certificate. The participants were then randomly divided into the FIFA 11+ training group (n=10) and control group (n=9). A pre-test post-test control group design with a 6 week intervention period was adopted. The physical characteristics of participants are given in Table 1.

Table 1. Physical characteristics of participants

Variable	FIFA 11+ Training Group (n=10)	Control Group (n=9)	p
Age (year)	13,9±0.6	13,7±0.8	.822
Height (cm)	167,9 ± 0,06	166,6 ± 0,09	.612
Body weight (kg)	58,4 ± 12,3	56,8 ± 9,88	.546

2.1.1. Training Group

They did 4 trainings per week. They applied FIFA 11+ program in addition to their routine trainings. FIFA 11+ exercises were performed two times per week (Table 2).

2.1.2. Control Group

This group applied 4 trainings per week. They did routine training program with the dynamic warm up program. The exercises in dynamic warm up program performed two times per week (Table 3). The control group's training duration matched the training group's duration (20–25 min).

Table 2. Components of FIFA 11+ program for training group

Exercise	Protocol
Part I: Running exercise (8 minutes)	
Running straight ahead	2 Repetitions
Running hip out	2 Repetitions
Running hip in	2 Repetitions
Running circling partner	2 Repetitions
Running shoulder contact	2 Repetitions
Running quick forwards and backwards	2 Repetitions

Part II: Strength, plyometrics, balance (10 minutes)	
The bench	
Level 1: static	3×20-30 sec
Level 2: alternate legs	3×20-30 sec
Level 3: one leg lift and hold	3×20-30 sec
Sideways bench	
Level 1: static	3×20-30 sec (each side)
Level 2: raise and lower hip	3×20-30 sec (each side)
Level 3: with leg lift	3×20-30 sec (each side)
Hamstrings	
Level 1: Beginner	3-5 Repetitions
Level 2: Intermediate	7-10 Repetitions
Level 3: Advanced	12-15 Repetitions
Single-leg stance	
Level 1: hold the Ball	2×30 sec
Level 2: throwing ball with partner	2×30 sec
Level 3: test your partner	2×30 sec
Squats	
Level 1: with toe raise	2×30 sec
Level 2: walking lunges	2×30 sec
Level 3: one leg squats	2×30 sec (each leg)
Jumping	
Level 1: vertical jumps	2×30 sec
Level 2: lateral jumps	2×30 sec
Level 3: box jumps	2×30 sec
Part III: Running exercises (2 minutes)	
Running across the pitch	2 Repetitions
Running bouding	2 Repetitions
Running plant and cut	2 Repetitions

Table 3. Components of dynamic warm up program for control group

Exercise	Protocol
High knee pull run	3 x 20 m
Heel kick	3 x 20 m
Hamstring stretch	1 x 10 repetitions (each leg)
Quadriceps stretch	1 x 10 repetions (each leg)
Arm rotation forward-backward	1 x 10 repetions (each arm)
Take a quick small step forward	3 x 20 m
Take a quick small step to the side	3 x 20 m
Stepping to the side	3 x 20 m
Squat walking to the side	1 x 20 repetitions (each leg)
Straight running	2 x 20 m
Sprint after active jump	2 x 5 m
Actice jump after sprint	2 x 5 m

(Ayala et al., 2017)

2.2. Data Collection Tools

In this study, we measured the 20-m sprint test, agility test, vertical jump test and sit and reach test for soccer-specific physical performance. The participants warmed up prior to the measurement. The fastest record from the two tests was used as the final record.

2.2.1. Anthropometric Measures

The participant's heights were measured with a scale having a sensitivity of 0.01 m (m), and their body weights (VA) were measured with electronic scales (SECA, Germany) with a sensitivity level of 0.1 kilograms (kg).

2.2.2. 20-m sprint test

Time during a 20-m sprint in a straight line was measured by means of single beam photocell gates placed 10 m above the ground level (Time It; Eleiko Sport, Halmstad, Sweden). Each sprint was initiated from an individually chosen standing position, 50 cm behind the photocell gate, which started a digital timer. Each player performed 2 maximal 20-m sprints interspersed with 3 min of passive recovery.

2.2.3. Illinois agility test

This test was used to determine the ability to accelerate, decelerate, turn in different directions, and run at different angles. The participants lies in the prone position with his chin touching the surface of the starting line. The first light sensor is placed at the start line, 50cm above the ground. The light sensor will be activated as the subject moves from the prone position. The second light sensor is placed at the finish line. Timing gates were placed at the start and finish lines at a height of 0.30 m. The participants performed two attempts and the resting period were 2 min. The faster time taken and recorded in seconds.

2.2.4. Vertical jump test (CMJ)

The participant' jumping performance was measured by Smart jump (Fusion Sport, Australia). All the participants were asked to sit on a mat, their hands on their buttocks and to jump as high as possible when ready. The participants, their hands on their hips and in an upright stance, rapidly collapsed downward and jumped to the maximum attainable height without pulling their knees upward while maintaining stretched legs. Resting intervals were 1 minute for recovery between jumps.

2.2.5.Sit and reach test (SR)

SR was used to evaluate trunk and lower extremity flexibility. A standard SR box was placed on the floor, by placing tape at a right angle to the 38 cm mark. The subject sat on the floor with shoes on, and fully extended one leg so that the sole of the foot was flat against the end of the box. He then extended his arms forward, placing one hand on top

of the other. With palms down, he reached forward sling hands along the measuring scale as far as possible without bending the knee of the extended leg.

2.3. Data Analysis

Data were processed using the SPSS software (SPSS ver. 21.0, IBM Corp., NY, USA). All data were presented as mean±standard deviation. The normality of the data distribution was evaluated with the Shapiro Wilk test. Since the normal distribution was determined, parametric tests were used to test the hypotheses. T-test analysis in the independent groups was used for pre-test and post-test comparisons between groups. T-test analysis in the dependent groups was used for the pre-test and post-test comparisons within the groups. Statistical significance was set at $p<.05$.

3. Results

The study included 19 young male soccer players. 5 participants were dismissed from the study. Because two subjects missed more than three training session and three subjects did not participate the post-test. There was no meaningful difference in age, height, weight between the training and control groups ($p>0.05$) (Table 1). In addition no statistically significant difference in some performance parameters was found between the groups (sprint test $p=0.60$, illinois test $p=0.69$, vertical jump test $p=0.78$, sit and reach test $p=0.42$) in the independent groups. But, in soccer-specific physical performance, there was a significant difference in participant's jumping performances in the comparisons within-groups (vertical jump test $p=0.00$) in the dependent groups (Table 5).

Table 4. T-test results in the comparisons between groups in the independent groups

Variable	Group	Pre-test	t	p	Post-test	t	p
20 m sprint test	Training group	3,40 ± 0.20	-0,31	0,76	3,39±0,14	0,53	0,60
	Control group	3,41±0,22			3,40±0,13		
Illinois agility test	Training group	17,8 ±1,27	-1,85	0,24	17,7±2,24	0,32	0,69
	Control group	18,4±2,32			18,2±0,21		
Vertical jump test	Training group	30,29±5,44	-1,57	0,13	36,08±4,57	0,28	0,78
	Control group	34,41±5,94			35,40±5,95		
Sit and reach test	Training group	18.5±6.12	-2,79	0,22	19,3±4,65	0.79	0,42
	Control group	20,8±8,42			21,2±6,24		

Table 5. T-test results in the comparisons within-groups in the dependent groups

Group	Variable	Mean±Sd	t	p
Training group	Sprint-pretest	3,40 ± 0.20	-0,13	0,90
	Sprint-post test	3,39±0,14		
	Agility-pretest	17,8 ±1,27	-1,65	0,84
	Agility-post test	17,7±2,24		
	Jumping-pretest	30,29±5,44	-3,97	0,00*

Control group	Jumping-posttest	36,08±4,57		
	Sit-reach-pretest	18.5±6.12	-1,14	0,29
	Sit-reach-post test	19,3±4,65		
	Sprint-pretest	3,41±0,22	1,14	0,28
	Sprint-post test	3,40±0,13		
	Agility-pretest	17,8 ±1,27	-1,56	0,66
	Agility-post test	17,7±2,24		
	Jumping-pretest	34,41±5,94	-0,77	0,46
	Jumping-posttest	35,40±5,95		
	Sit-reach-pretest	20,8±8,42	-2,10	0,07
	Sit-reach-post test	21,2±6,24		

4. Discussion

The purpose of this study is to determine the effects of a 6-week FIFA 11+ training program on soccer-specific athletic performance in male football players. The results of the study show that the participants who had completed the FIFA 11+ program for 6 weeks did not significantly enhance their sprint, agility and flexibility performance. But the results of the study show that the FIFA 11+ training group have an significant progress in jumping performance. These results are in part similar to the results of Akbari et al. (2018). In this stuy a significant progress was found in the vertical jump performance between groups in post-test (p=0.002).

By the implementation of the FIFA 11+ program two times per week for 4 weeks, some improvements can be seen in some performance parameters in athletes such as dynamic postural control, agility and jumping performance (Silvers et al., 2014; Rossler et al., 2016; Ayala et al., 2017; Bashir et al., 2018; Yalfani et al., 2020). In the study which conducted by Rossler et al., (2016), the FIFA11+ program was applied to the young soccer players twice a week for 10 weeks. Similar improvements have been reported in postural control, agility, and jumping activities in athletes. But, unlike this article, these researchers revealed improvements in the slalom dribble and wall volley tests of the athletes. The reason of these conflicting results may be different duration of the intervention phase, the number of participants, and the level of physical activity.

Sprint performance is an important movement in soccer. Especially, linear sprints repeatedly occur before scoring a goal (Haugen et al., 2014). Therefore this activity may change the results of the game. Plyometric training in soccer contributes to the improvement of sprint performance in athletes. Part II of the FIFA 11+ program used in our study contains bounding or high-impact plyometric exercises such as lateral and vertical jumps. These activities would have contributed to improve sprint performance by advancing power of the athletes.

There are studies in the literature that are similar to the results of our studies in terms of sprint performance. For instance, in the study was conducted by Daneshjoo et al., (2013) no significant improvement was found in athletes' sprint performance following 8 weeks of the FIFA 11+ program. In same way, Impellizzeri and Bizzini reported a similar findings in amateur soccer athletes following 9 weeks of the FIFA 11+ program. But, in the study was conducted by Reis et al., (2013) a significant progress was reported in the athletes' sprint values. And also, a recent study was conducted by Ayala et al., (2017) a significant progress was detected in the athletes' sprint performance following 4 weeks of the FIFA 11+ program.

In this study, we measured the agility performance of the athletes while they rapidly attacked to the other ways. These activities demand neuromuscular control, and football players must continuously apply closed skill drills (e.g. changing of direction and jumping). The activities in the FIFA 11+ program are focus on the athlete's leg strength, balance, dynamic postural control while cutting and landing movements. If the FIFA 11+ program is used adequately in warm up, ıt could support players to apply the complex activities, such as coordination and agility by enhancing their neuromuscular control.

Conversely, ıf muscular synergy is reduced and the athlete has weak core stability of the trunk, pelvis stabilizers in athlete will reduce his performance and decrease the control of the center of mass. Thus, there will be an increment in the athlete's injuries (Hewett et al., 2005). In the literatüre thera are many studies reported that core training can consireably enhance sprint and agility performance in athltes (Bashir et al., 2018). Nesser et al., (2008) have stated that core stability in soccer athletes is very important for sprint performance. Because improved core stability in the athlete will contribute to the improvement of sprint performance. 12-weeks ECCst training more effective in improving lower extremity strength (1RM lying leg curl, machine abduction, machine adduction) and vertical jump of soccer players than CONst training programs. There were similar increases in both ECCst and CONst in (1RM leg extension) and 20 m sprint. According to the findings of present study, while ECCst is recommended to coaches for strength development of soccer players, both training methods can be recommended to improve speed and anaerobic power performances (Erol and Arabacı, 2022). According to Bastık et al., (2012), the locomotors sub-test scores were examined according to the sports branches; the locomotors sub-test scores of children who participated in swimming, table tennis and soccer teams were found higher significant differences statistically than the another children who participated in competitions of taekwondo, tennis and handball teams, respectively.

FIFA 11+ program are designed for players over 14 years old. With the implementation of this program, significant improvements occur in children's movement patterns, stability and trunk muscle endurance. More research is needed to investigate the effects of detailed soccer warm-up exercises on injury prevention in prepubertal period.

There are a few limitations in our study. First of all, it can be said that the sample size is limited. Future studies can be done with more subjects. Second, FIFA 11+ program decreases the risk of the injury. But, we pursued the changes of performance due to FIFA 11+ program and did not examine how much these changes contributing the decrease of the injuires among the participants.

5. Conclusion

In this study, a 6-week FIFA 11+ program had a significant effects on jumping performance in young male soccer players. In many studies in the literature, it has been determined that as a result of the implementation of the FIFA 11 + program, there is a decrease in the risk of injury and medical costs as well as improvements in the athletes' performance. The coaches and athletes should increase their awareness of injury prevention strategies. In addition they are be familiar with FIFA 11+ programs more over learn to how apply each exercise with appropriate motion activities. As a result, we recommend to coaches to use the FIFA 11+ program as a warm-up activity before the game or during training sessions.

Conflict of Interest

Authors state no conflict of interest.

Acknowledgements

The authors thank all the participants for the study, and the authors whose work were cited for the study.

References

Akbari, H., Sahebozamani, M., Daneshjoo, A., Amiri-Khorasani, M. (2018). Effect of the fıfa 11+ programme on vertical jump performance in elite male youth soccer players, Monten. J. Sports Sci. Med. 7 (2): 17-22 | DOI 10.26773/mjssm.180903 17

Ayala, F., Calderón-López, A., Delgado-Gosálbez, J.C., Parra-Sánchez, S., Pomares-Noguera, C., Hernández-Sánchez, S. (2017). Acute effects of three neuromuscular warm-up strategies on several physical performance measures in football players. Plos One, 12(1).1-11

Bashir, S.F., Nuhmani, S., Dhall, R., Muaidi, QI. (2018). Effect of core training on dynamic balance and agility among Indian junior tennis players. J Back Musculoskelet Rehabil. 8(2): 64-74.

Bastık, C., Kalkavan, A., Yamaner, F., Sahin, S., & Gullu, A. (2012). Investigation of Basic Motor Skills According to TGMD-2 Test on Male Athletes of 10 Ages Group Who Participated to Competitions in Different Sports Branches. Procedia-Social and Behavioral Sciences, 46, 4741-4745.

Bizzini, M., Junge, A., Dvorak, J. (2011). The "11+" Manual. A complete warm-up programme to prevent injuries. (FIFA Medical Assessment and Research Centre, Ed.). Zurich.

Bizzini, M., Impellizzeri, F.M., Dvorak, J., et al. (2013). Physiological and performance responses to the "FIFA 11+" (part 1): Is it an appropriate warm-up? J Sports Sci. 31(13):1481-90.

Daneshjoo, A., Mokhtar, A. H., Rahnama, N., & Yusof, A. (2012). The effects of comprehensive warm-up programs on proprioception, static and dynamic balance on male soccer players. Plos One, 7(12), 1–10. http://doi.org/10.1371/journal.pone.0051568.

Daneshjoo, A., Mokhtar, A.H., Rahnama, N., Yusof, A. (2013). Effects of the 11+ and Harmoknee warm-up programs on physical performance measures in professional soccer players. J Sports Sci Med, 12:489-97.

Erol, S., & Arabaci, R. (2021). Eccentric and Concentric Training in Soccer. LAP Lambert Academic Publishing.

Erol, S., Arabacı, R. (2022). The effects of 12-week eccentrıc and concentrıc strength traınıng on the physıcal fıtness characterıstıcs of football players. Kinesiologia Slovenica, 28(1):96-107.

Fuller, C. W., Junge, A., Dorasami, C., DeCelles, J., Dvorak, J. (2011). "11 for Health", a football-based health education programme for children: a twocohort study in Mauritius and Zimbabwe. Br J Sports Med, 45(8), 612–618. http://doi.org/10.1136/bjsm.2011.084905

Haugen, T., Tønnessen, E., Hisdal, J., Seiler, S. (2014). The role and development of sprinting speed in soccer. Int J Sports Physiol Perform. 9(3): 432-41.

Hewett, T.E., Zazulak, B.T., Myer, G.D., Ford, K.R. (2005). A review of electromyographic activation levels, timing differences, and increased anterior cruciate ligament injury incidence in female athletes. Br J Sports Med. 39(6): 347-50.

Impellizzeri, F.M., Bizzini, M., Dvorak, J., Pellegrini, B., Schena, F., Junge, A. (2013). Physiological and performance responses to the FIFA 11+ (part 2): a randomised controlled trial on the training effects. J Sports Sci, 31(13), 1491–502. http://doi.org/10.1080/02640414.2013.802926.

Joo, C.H. (2018). The effects of short term detraining and retraining on physical fitness in elite soccer players. PLoS One. 13(5):0196212.

Junge, A., Lamprecht, M., Stamm, H., Hasler, H., Bizzini, M., Tschopp, M., Dvorak, J. (2011). Countrywide campaign to prevent soccer injuries in Swiss amateur players. Am J Sports Med, 39(1), 57–63. http://doi.org/10.1177/0363546510377424.

Nesser, T.W., Huxel, K.C., Tincher, J.L., Okada, T. (2008). The relationship between core stability and performance in division I football players. J Strength Cond Res. 22(6):1750-4.

Owoeye, O. B. A., Akinbo, S. R. A., Tella, B. A., Olawale, O. A. (2014). Efficacy of the FIFA 11+warm-up programme in male youth football: A cluster randomised controlled trial. J Sports Sci Med, 13(2), 321–328.

Reis, I., Rebelo, A., Krustrup, P., Brito, J. (2013). Performance enhancement effects of Federation Internationale de Football Association's "The 11+" injury prevention training program in youth futsal players. Clin J Sport Med, 23:318–20.

Rossler, R., Donath, L., Bizzini, M., Faude, O. (2016). A new injury prevention programme for children's football--FIFA 11+ Kids--can improve motor performance: a cluster-randomised controlled trial. J Sport Sci. 34(6):549-556. doi: 10.1080/02640414.2015.1099715 pmid: 26508531

Rössler, R., Donath, L., Verhagen, E., Junge, A., Schweizer, T., Faude, O. (2014). Exercise-based ınjury prevention in child and adolescent sport: A systematic review and meta-analysis. Sports Med, 44(12), 1733–1748. http://doi.org/10.1007/s40279-014-0234-2.

Silvers, H., Mandelbaum, B., Bizzini, M., Dvorak, J. (2014). The efficacy of the FIFA 11+ program in the collegiate male soccer player (USA). Bri J Sports Med, 48 (7), 662-70. http://doi.org/10.1136/bjsports-2014-093494.272

Soligard, T., Myklebust, G., Steffen, K., Holme, I., Silvers, H., Bizzini, M., Andersen, T. E. (2008). Comprehensive warm-up programme to prevent injuries in young female footballers: cluster randomised controlled trial. Bri Med J (Clinical Research Ed.), 337, a2469.

Steffen, K., Bakka, H.M., Myklebust, G., Bahr, R. (2008). Performance aspects of an injury prevention program: A ten-week intervention in adolescent female football players. Scand J Med Sci Sports, 18(5): 596–604.

Steffen, K., Emery, C. A., Romiti, M., Kang, J., Bizzini, M., Dvorak, J., Meeuwisse, W. H. (2013). High adherence to a neuromuscular injury prevention programme (FIFA 11+) improves functional balance and reduces injury risk in Canadian youth female football players: a cluster randomised trial. Bri J Sports Med, 47(12), 794–802. http://doi.org/10.1136/bjsports-2012-091886.

Yalfani, A., Saki, F., Kerman, M.T. (2020). FIFA 11+ and 11+ kids warm up programs affect on ınjury prevention, Ann Appl Sport Sci 8(4): e832, http://www.aassjournal.com; e-ISSN: 2322–4479; p-ISSN: 2476–4981.