

## ORIGINAL SCIENTIFIC PAPER

# The FIFA 11+ Kids Injury Prevention Program: Awareness, Implementation, and Opinion of Children's Football (Soccer) Coaches

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## Abstract

The Fédération Internationale de Football Association (FIFA) 11+ Kids Injury Prevention Program was developed and shown to effectively reduce football-related injuries in numerous studies. The aim of this study was to assess the awareness, implementation, and opinion of children's football coaches worldwide regarding the FIFA 11+ Kids Injury Prevention Program efficacy using a self-administered questionnaire. Six hundred children's football coaches were invited through their local Football Federations to complete the online survey consisted of questions relating to awareness, implementation, and coaches' opinions of the FIFA 11+ Kids Injury Prevention Program. A total of 486 children's soccer coaches completed the survey. The survey was available in different languages. A total of 202 (41.6%) of the children's football coaches reported awareness of the FIFA 11+ Kids Injury Prevention Program and 155 (31.9%) reported implementing the FIFA 11+ Kids Injury Prevention Program in their current practice. Participants who reported implementation of the FIFA 11+ Kids Injury Prevention Program also reported a positive attitude towards program efficacy, with a score of  $8.19 \pm 0.88$  out of 10. To conclude, there is a need for further efforts and research to increase international awareness and implementation of the FIFA 11+ Kids Injury Prevention Program.

**Keywords:** kids injury prevention programs, perception, application, worldwide, children's football coaches, soccer

## Introduction

Soccer (football) is one of the most popular sports in the world particularly among kids and adolescents (Dvorak et al., 2004). According to the Fédération Internationale de Football Association (FIFA, 2019) about 265 million players are playing football around the world. A majority of them (57%) are under the age of 18 years and nearly three-quarters of these young footballers are aged less than 14 years (Yalfani et al., 2020). In football, injuries are prevalent re-

gardless of age, sex, and competition level (Peterson et al., 2000). It has been shown that high incidence of football injuries amongst young and adult players, the type and characteristics of these football-related injuries in kids between 7-12 years old differ than their adult counterparts (Yalfani et al., 2020). For example, upper body and bones injuries in kids 7-12 years old are relatively more common than adults (Rössler et al., 2018). Sport-related injuries have been associated with an increase in the rate of children drop-



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ping out of their sports during competition (Maffulli et al., 2010; Bangsbo et al., 2014) and, as a result of these injuries they become less physically active (Rössler et al., 2016). Therefore, injury prevention is a very important aspect to consider when training a young athlete given the negative consequences affecting their performance (Ekstrand, 2013), as well as their short and long-term health.

Another aspect of sports-related injuries to consider is the monetary cost of performance decline and rehabilitation. Therefore, applying injury prevention strategies at this young age group is not only valuable to reduce risk of injuries and disabilities as well as avoid various other negative effects on players' health (Rössler et al., 2014).

The FIFA 11+ Kids Injury Prevention Program, which was developed by various international experts for children between the age of 7 and 13 year is warm-up program that aims to minimize risk factors that may lead to injury (Rössler et al., 2018). The FIFA 11+ kids injury prevention program was previously investigated and was found to efficiently reduce football-related injury occurrences in numerous studies (Peterson et al., 2000; Maffulli et al., 2010; Bangsbo et al., 2014; Rössler et al., 2014, 2016, 2018; Gatterer et al., 2018; Zarei et al., 2020). A study by Rössler et al. (2018) examined the effect of the FIFA 11+ injury prevention program for kids and on injury rate and found a 48% reduction in overall injury rate. Furthermore, Zarei et al. (2020) assessed the efficacy of the FIFA 11+ Kids Injury Prevention Program in high-level young male football players between the ages of 7 and 14 years and found an overall reduction in injury rate by 50%. In the same study, overall injury was reduced by 58%, and lower limb and knee injuries were reduced by 55% and 66%, respectively. More specifically, the program was found to enhance physical fitness components like balance which has been shown by many studies to be associated with sports injuries and may be helpful in the prevention of injuries when improved (Zarei et al., 2018). The FIFA 11+ Kids injury prevention program was also shown to significantly reduce healthcare costs by more than 50% over the course of 1000 hours per football exposure (Rössler et al., 2019). Moreover, a cluster randomized controlled trial conducted by Al Attar et al. (2021b) to investigate the effect of the FIFA 11+ Kids injury prevention program on reducing the incidence of injuries among children soccer players aged 7-13 years. In their study, ninety-four boys' soccer teams (780) players (under 8 years, under 9 years, under 11 years, and under 13 years age groups) were randomly allocated into the experimental or a control group. The experimental group performed the FIFA 11+ Kids injury prevention program as warm-up during training sessions for at least twice a week, and the control group performed their usual warm-ups. They found that implementation of the FIFA 11+ Kids injury prevention program reduced overall injury rates in boys' soccer players more than the usual warm-up by 57% over 1000 hours per football exposure.

The FIFA 11+ Kids injury prevention program is primarily focused on improving coordination, balance, strengthening of the leg and core muscles, and recovery from perturbation (Rössler et al., 2016). As described in the FIFA 11+ Kids Injury Prevention Program's manual (Rössler et al., 2016), the program includes seven exercises and is suggested to be performed as a warm-up before the

athletes' training session. Each exercise has five levels of difficulty ranging from level one to five. Youth coaches are advised to be cognizant of the young athlete's posture and motor control and correct them as needed. The program was reported to take approximately 15 to 20 minutes to complete and was advised to be performed twice a week for at least 12 weeks (Rössler et al., 2016). The program is advised to be performed under the supervision of the coach (Steffen et al., 2013) as their knowledge, awareness, and positive outlook is essential to take advantage of the program and help the athletes' reach their athletic potential. Therefore, the primary aim of this study was to investigate the level of awareness and perceptions of worldwide football coaches towards the FIFA 11+ Kids Injury Prevention Program. The outcomes of this study may be a guide to discovering reasons behind youth coaches' apprehension towards utilizing the FIFA 11+ Kids Injury Prevention Program.

## Materials and methods

### *Survey development*

A survey was developed specifically for the current study according to previous validated questionnaires Al Attar, et al. (2021a), and Al Attar et al. (2022). The self-administered questionnaire consisted of socio-demographic questions and questions regarding their awareness of the FIFA 11+ Kids Injury Prevention Program. Children's football coaches who reported to be aware of the FIFA 11+ Kids Injury Prevention Program were then asked if they were implementing it. The participants who responded affirmatively were then asked of their opinion of the program's efficacy on a linear scale of 0-10 (ineffective-very effective). The survey was developed in English and translated to 10 languages (Arabic, Chinese, French, German, Italian, Japanese, Portuguese, Russian, Spanish and Turkish). The Biomedical Ethics Committee at Umm Al Qura University reviewed and approved the study. Approval No. (HAPO02K012202010459).

### *Survey dissemination*

Six hundred children's football coaches were invited through their local Football Federations to complete the online survey Google Forms (Alphabet Inc., Mountain View, California, United States). A total of 486 children's soccer coaches completed the survey (response rate of 81%). The invitation provided a brief background of the survey and encouraged coaches to participate. Participants clicked on an electronic link that led them to the survey description. Once the participants read the scope and aim of the survey, they were asked to provide informed consent and access the survey. The survey was filled anonymously and electronically via an online survey software. Responses were collected from June 2019 to June 2020.

### *Sample Size and Statistical analysis*

Considering a 4% margin of error at 95% confidence level, the target number of participants was 597. Frequencies and percentages of all nominal variables, mean, standard deviation (SD) for score of opinion were calculated using Microsoft Excel 2010 (Microsoft Corporation, Redmond, WA, USA). A Chi-square test was used to compare different geographical locations with respect to awareness, implementation. A one-way analysis of variance (ANOVA)

was used to compare different geographical locations with respect to opinion. Results were considered significant for P-values below 0.05 ( $P < 0.05$ ). Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) version 24.0 (SPSS Inc, Chicago, IL, USA).

## Results

The total number of respondents was 486 children's soccer coaches; most of them were males (96.3%). The highest participation rate was reported from the Union of European Football Associations (UEFA) (38.9%) and the lowest was reported from the Oceania Football Confederation (OFC) (2.9%). The participant characteristics are shown in Table 1.

### Level of awareness

When participants were asked if they were aware of the FIFA 11+ Kids Injury Prevention Program, less than half

(41.6%) answered with "yes" while a greater percentage at 58.4% answered "no". Statistically significant differences ( $P < 0.001$ ) were found in the awareness levels between the different continental football federations (CFFs). The OFC reported the greatest percentage at 57.1%, followed by the UEFA at 51.9%, the Asian Football Confederation (AFC) at 41.6%, the South American Football Confederation (CONMEBOL) at 39.4%, the Confederation of North, Central American and Caribbean Association Football (CONCACAF) at 33.3%, and the Confederation of African Football (CAF) at 17.6%. The awareness levels are shown in Table 2.

### Level of implementation

The implementation level among participants who reported awareness of the program (41.6%) was calculated to be 31.9% with 9.7% of those who reported awareness

**Table 1.** Participants Demographics

Variable	n (%)
<b>CFFs</b>	
UEFA	189 (38.9)
CONMEBOL	33 (6.8)
AFC	137 (28.2)
CAF	74 (15.2)
CONCACAF	39 (8.0)
OFC	14 (2.9)
<b>Gender</b>	
Male	468 (96.3)
Female	18 (3.7)
<b>Aware</b>	
Yes	202 (41.6)
No	284 (58.4)
<b>Implement</b>	
Yes	155 (31.9)
No	47 (9.7)
<b>Opinion</b>	
0	0 (0)
1	0 (0)
2	0 (0)
3	0 (0)
4	0 (0)
5	1 (0.2)
6	2 (0.4)
7	32 (6.6)
8	55 (11.3)
9	61 (12.6)
10	4 (0.8)
Mean $\pm$ SD	8.194 $\pm$ 0.883

Note AFC, Asian Football Confederation; CAF, Confederation of African Football; CFFs, Continental Football Federations; CONCACAF, Confederation of North, Central American and Caribbean Association Football; CONMEBOL, The South American Football Confederation; OFC, Oceania Football Confederation; UEFA, Union of European Football Associations.

**Table 2.** Awareness level of FIFA 11+ kids injury prevention program

Variable	Aware of the 11+ Kids program n (%)	No aware of the 11+ Kids program n (%)
<b>Gender</b>		
Male	189 (40.4)	279 (59.6)
Female	13 (72.2)	5 (27.8)
<b>CFFs</b>		
UEFA	98 (51.9)	91 (48.1)
CONMEBOL	13 (39.4)	20 (60.6)
AFC	57 (41.6)	80 (58.4)
CAF	13 (17.6)	61 (82.4)
CONCACAF	13 (33.3)	26 (66.7)
OFC	8 (57.1)	6 (42.9)

Note AFC, Asian Football Confederation; CAF, Confederation of African Football; CFFs, Continental Football Federations; CONCACAF, Confederation of North, Central American and Caribbean Association Football; CONMEBOL, The South American Football Confederation; OFC, Oceania Football Confederation; UEFA, Union of European Football Associations.

reported no implementing the injury prevention program. The football coaches who reported implementing the current the FIFA 11+ Kids Injury Prevention Program were asked of their perception of the program's efficacy, and the results demonstrated a relatively positive perception, with a mean ( $\pm$ SD) score of 8.19 ( $\pm$ 0.88) out of 10, and a median of 8 out of 10. A statistically significant difference ( $P>0.05$ )

was also found in the level of implementation between the different CFFs. Furthermore, the current study results showed a significant association between the awareness and the implementation level, as a significant greater percentage of aware participants reported implementation at 76.7%, and a  $P<0.001$ . The implementation levels are shown in Table 3.

**Table 3:** Implementation level of FIFA 11+ kids injury prevention program

Variable	Implement the 11+ Kids program n (%)	Not implement the 11+ Kids program n (%)
<b>Gender</b>		
Male	147 (77.8)	42 (22.2)
Female	8 (61.5)	5 (38.5)
<b>CFFs</b>		
UEFA	78 (79.6)	20 (20.4)
CONMEBOL	11 (84.6)	2 (15.4)
AFC	44 (77.2)	13 (22.8)
CAF	9 (69.2)	4 (30.8)
CONCACAF	9 (69.2)	4 (30.8)
OFC	4 (50.0)	4 (50.0)

Note. AFC, Asian Football Confederation; CAF, Confederation of African Football; CFFs, Continental football federations; CONCACAF, Confederation of North, Central American and Caribbean Association Football; CONMEBOL, The South American Football Confederation; OFC, Oceania Football Confederation; UEFA, Union of European Football Associations.

#### Sex differences

As shown in Table 1, a total of 486 worldwide football coaches participated in the current study; 96.3% were male and 3.7% were female. There was a significant difference  $P=0.003$  in participation by gender between the different CFFs, where the greatest male participation was from CONMEBOL at 100%, and the greatest female participation from CONCACAF at 5.4%.

The results showed female football coaches having a significantly greater awareness level of the FIFA 11+ kids' injury prevention program when compared to their male counterparts at 72.2% versus. 40.4%, respectively, with  $P=0.007$ . On the other hand, the level of implementation was not significantly different by gender; it was lower among female coaches

at 61.5% compared to 77.8% among their male counterparts, with  $P=0.157$ .

#### Geographical location

The largest proportion of the participants was from the UEFA at 38.9% followed by 28.2% from the AFC. The statistical analysis showed OFC to have the lowest participation level at 2.9% followed by CONMEBOL 6.8%. When investigating perception and opinion scores, all federations reported a relatively positive perception. Since the vast majority scored it as either "8" at 35.5% or "9" at 39.4%. Although not statistically significant  $P=0.904$ , CONCACAF demonstrated the greatest perception score at 8.44 ( $\pm$ 0.88) out of 10. Comparison between the CFFs is shown in Table 4.

**Table 4.** Comparison between the continental football federations

Variable	UEFA n (%)	CONMEBOL n (%)	AFC n (%)	CAF n (%)	CONCACAF n (%)	OFC n (%)
<b>Gender</b>						
Male	183 (96.8)	33 (100)	134 (97.8)	72 (97.3)	33 (84.6)	13 (92.9)
Female	6 (3.2)	0 (0.0)	3 (2.2)	2 (2.7)	6 (15.4)	1 (7.1)
<b>Aware</b>						
Yes	98 (51.9)	13 (39.4)	57 (41.6)	13 (17.6)	13 (33.3)	8 (57.1)
No	91 (48.1)	20 (60.6)	80 (58.4)	61 (82.4)	26 (66.7)	6 (42.9)
<b>Implement</b>						
Yes	78 (79.6)	11 (84.6)	44 (77.2)	9 (69.2)	9 (69.2)	4 (50)
No	20 (20.4)	2 (15.4)	13 (22.8)	4 (30.8)	4 (30.8)	4 (50)
<b>Opinion</b>						
0	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
3	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
4	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
5	1 (1.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
6	1 (1.3)	0 (0.0)	1 (2.3)	0 (0.0)	0 (0.0)	0 (0.0)
7	17 (21.8)	1 (9.1)	9 (20.5)	3 (33.3)	1 (11.1)	1 (25.0)
8	28 (35.9)	7 (63.6)	13 (29.5)	2 (22.2)	4 (44.4)	1 (25.0)
9	30 (38.5)	3 (27.3)	19 (43.2)	4 (44.4)	3 (33.3)	2 (50.0)
10	1 (1.3)	0 (0.0)	2 (4.5)	0 (0.0)	1 (11.1)	0 (0.0)

Note AFC, Asian Football Confederation; CAF, Confederation of African Football; CFFs, Continental Football Federations; CONCACAF, Confederation of North, Central American and Caribbean Association Football; CONMEBOL, The South American Football Confederation; OFC, Oceania Football Confederation; UEFA, Union of European Football Associations.

## Discussion

This is the first published study to assess the awareness and implementation levels of the FIFA 11+ Kids Injury Prevention Program among football coaches globally. Although coaches represent the program deliverers and are essential to participant safety, our results showed that most of the worldwide children football coaches are relatively unaware of the FIFA 11+ Kids Injury Prevention Program. The results revealed low levels of awareness but high levels of implementation among the participants who have reported awareness of the FIFA 11+ Kids Injury Prevention Program, which is in line with that have been observed in a similar study by Al Attar et al. (2018) and Zarei et al. (2018). The awareness levels of the FIFA 11+ Kids Injury Prevention Program was 41.6% among children's football coaches in the current study which is lower than the reported level of awareness of the FIFA11+ Injury Prevention Program among coaches of adolescent female football teams, which was at 58% (Donaldson et al., 2018), and also lower than the level of awareness of lower limb injury prevention programs among coaches of young football players in other international studies (Norcross et al., 2016; Morgan et al., 2018). This might be attributed to the lack of educational programs and instructions about the FIFA11+ Kids Injury Prevention Program from the specialized authorities or might be due to the lack of facilities that might support implementing this program (Maffulli et al., 2010; Bangsbo et al., 2014; Rössler et al., 2014, 2016; Gatterer et al., 2018;).

Although these results revealed some awareness of the

FIFA 11+ Kids Injury Prevention Program, approximately one-quarter of the kids' football coaches did not utilize this intervention. Incomplete implementation or no implementation was reported in studies investigating other injury prevention programs (McKay et al., 2014; Wilke et al., 2018). This could be due to the lack of knowledge or maybe something psychological that may be causing this apprehension. So, emphasizing an in-depth understanding and knowledge of injury prevention and thus, understanding the FIFA 11+ Injury Prevention Program may encourage utilizing the program by more adult and youth coaches around the world. Coaches may find going beyond simply being provided the program instructions to be more beneficial (O'Brien & Finch, 2016).

A great awareness level of 80% of participants was reported from coaches of Swedish amateur players using the FIFA 11 (a precursor to the FIFA 11+) (Junge et al., 2011). Ninety-one percent of coaches in eight Swedish district football associations were aware of similar neuromuscular training programs (Lindblom et al., 2014). The main resource for information regarding injury prevention and injury prevention programs is the governing body of football whether it be state, national, or international governing football associations (Herman et al., 2012; Donaldson et al., 2018). Therefore, increasing awareness levels of the FIFA11+ Kids Injury Prevention Program can be done utilizing these governing associations reach by spreading educational material via communication channels like websites, e-newsletters, and social media platforms, as well as the influence of informal learning networks (Poulos &



Donaldson, 2012).

Reasons for lack of implementation of the FIFA11+ Kids Injury Prevention Program were not investigated in this study. However, Donaldson et al. (2018) investigated the knowledge and perception of female football coaches about the FIFA 11+ Injury Prevention Program in Australia. They found that 27 participants from a total of 64 respondents were not aware of the FIFA 11+ Injury Prevention Program. Nineteen of the 64 participants did not use program in its entirety, and 18 participants used the program did not use it in its recommended frequency. Therefore, it can be gleaned that barriers to implementing the FIFA 11+ Injury Prevention Program indeed includes lack of knowledge and limited awareness of the program as also seen in this current study. Another study conducted by O'Brien and Finch (2016) aimed to study the perception of football coaches, fitness coaches, and physiotherapists working with four male elite junior football teams towards injury prevention and level of implementation of the FIFA 11+ Injury Prevention Program during the season (2014/2015) in Australia. They found that 61% of respondents have some knowledge of the FIFA 11+ Injury Prevention Program with some suggesting certain modifications in order to integrate the program as part of the athlete's training regimen, which

#### Acknowledgments

The author(s) would like to thank all coaches who participated in this project.

#### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

#### Disclosure statement

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Received:** 26 February 2022 | **Accepted:** 21 May 2022 | **Published:** 01 June 2022

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may explain some of the apprehension to implanting the program as a permanent solution to reducing the rate of various sports-related injuries.

Based on the current study findings, program implementation is highly dependent on levels of awareness. However, there is a need to further examine and address the possible causes of low levels of awareness and inconsistent implementation of the FIFA 11+ Kids Injury Prevention Program among football coaches around the world.

#### Conclusion

Globally, kids football coaches demonstrated a relatively poor level of awareness of the FIFA 11+ Kids Injury Prevention Program. However, implementation levels among those who have reported awareness was adequate. Kids football coaches reported an overall positive perception regarding the efficacy of the FIFA 11+ Kids Injury Prevention Program in reducing and preventing injuries. Future research can aim to specifically define and address the different factors contributing to these variables such as program utilization, feasibility, and suitability. Addressing specific reasons for lack of implementation may be of use for developing a more accessible injury prevention, thus reducing negative consequences of sports-related injuries.

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