Fifa 11+ kids can increase muscle strength: A 12 weeks of treatment

by Khoiril Anam

Submission date: 29-Aug-2022 12:56PM (UTC-0400)
Submission ID: 1888900894
File name: 18059-Article_Text-31812-1-11-20220729_1.docx (72.03K)
Word count: 2571
Character count: 13542

Fifa 11+ kids can increase muscle strength: A 12 weeks of treatment

Abstract

This study aims to determine the application of the FIFA 11+ Kids program to increase muscle strength in children aged 11-12 years. This research uses experimental research with a pretest-posttest control group design. Twenty people were sampled in this study, divided into two groups: the treatment group and the control group. Purposive sampling was used in determining the research sample. The subject matching A-B-A technique was used to divide the treatment group and the control group. The instrument in this study is to measure arm muscle strength using a push-up test, measure leg muscle strength using a leg dynamometer test, and measure abdominal muscle strength using a sit-up test. Data analysis in this study used a paired sample t-test with a significance level of 5%. The results of the study in the treatment group showed a significance value of 0.000 ($p<0.05$), a significant value of leg strength was 0.004 ($p<0.05$), while a significant value of abdominal strength was 0.000 ($p<0.05$). Coaches and athletes can use the implications of this research as an injury prevention method for child footballers.

Keywords: FIFA 11+ kids, football, strength

INTRODUCTION

Football is a sport that requires high-intensity requires, complex training with a long training duration. The sport involves a lot of strength and skill (Mallick, 2019). In addition to depending on the aerobic energy system, soccer requires a neuromuscular system when making rapid changes in direction, jumping, kicking, turning, and running when trying to defend the ball (Hamdani & Abdurrasyid, 2017; Pomares-Noguera et al., 2018).

Most football players train from the age of 7-12 years. The rate of injury suffered by children is higher than that of adolescent and adult players. In children aged 7-12 years, the injury rate reached 0.61/1000 hours (Pomares-Noguera et al., 2018). This may be due to low skills and lack of muscle strength which makes it prone to injury (Nasrulloh & Wicaksono, 2020). To prevent or reduce sports injuries, especially in football, it is necessary to be in excellent physical condition. Essential components of physical condition that need to be developed as much as possible are strength, cardiorespiratory endurance, coordination, balance, speed, reaction speed, agility, flexibility, and body composition (Anam et

al., 2012; Kumar, 2019; Yalfani et al., 2020). The strength component is the underlying component of other biomotor components, which must be improved (Pembayun et al., 2018). This is supported by several underlying reasons that strength is the driving force in all physical activities because strength plays a vital role for athletes in avoiding injury (Anam et al., 2012; Pooja & Nagaraja, 2018). Muscle strength is perceived as the maximum force or torque of a muscle or muscle that can withstand resistance during certain activities (Ramadhan et al., 2021; Singh et al., 2022) from various sports such as swimming, basketball, athletics, volleyball, strength indispensable, especially in football (Pratiwi et al., 2018). Muscle strength plays an important role in soccer. This can be seen when a football player tries to grab the ball from the opponent due to a body collision, and the urge to grab the ball from the opponent can be supported by having good muscle strength. When players have good muscle strength, it will help control the ball obtained from the opponent (Akbar & Indardi, 2014).

Previous studies have shown that the FIFA 11+ Kids warm-up program can reduce the risk of injury and improve physical fitness factors such as balance, jumping, and lower leg isokinetic strength (Yalfani et al., 2020). Substantial evidence also shows that the FIFA 11+ program can increase functional activity in football players at risk of injury (Hamdani & Abdurrasyid, 2017). The research of Donaldson et al. (2018) implemented FIFA 11+ on female footballers aged 12-18 years which resulted in ineffectiveness in injury prevention by increasing strength. In addition, a previous study on 10-year-old male footballers, FIFA 11+ Kids, increased stability with a possible positive effect on injury prevention (Gatterer et al., 2018). Exercise-based injury prevention programs aim to modify modifiable intrinsic risk factors such as lack of strength (Zarei et al., 2019). Has shown that an exercise program that aims to increase muscle strength in the hips and legs can reduce the risk of injury to footballers (Faude et al., 2017; Rossler et al., 2014). Based on the studies that have been carried out, few focus on the long-term FIFA 11+ Kids warm-up program (for 12 weeks) on aspects of muscle strength in children aged 11-

12 years. So that this research has a novelty regarding the long-term treatment of FIFA 11+ Kids and focuses on aspects of muscle strength in 11-12-year-olds. So this study aims to determine the increase in strength after implementing the FIFA 11+ Kids program in children aged 11-12 years for 12 weeks.

METHOD

This study uses an experimental research type, where experimental research is research conducted to find out the results of other variables that are given a treatment intentionally by researchers (Ibrahim et al., 2018; Strapless et al., 2015). The design of this study used a pre-test-post-test control group design (Yusuf et al., 2014). This study aims to determine the effect of FIFA 11+ Kids on increasing arm muscle strength, leg muscle strength, and abdominal muscle strength in footballers aged 11-12 years. Diponegoro University Stadium, where the research was conducted. The data collection period was 12 weeks, where in one week, two exercises were carried out (Rössler et al., 2015). The sample used in this study was 20 people. This study uses a purposive sampling technique, as specific considerations are used to find data sources in accordance with what is expected (Allistia et al., 2021). The research sample was selected with inclusion and exclusion criteria, which included 1) Male gender, 2) 11-12 years old, 3) Regularly participating in soccer practice, and 4) Willing to be a sample until the end of the study. As for the exclusion criteria, the respondent was injured and was not willing to participate in the research process from beginning to end.

Table 1. Demographics of the research group

	Age/Year Mean±SD	Body Mass Index Mean±SD	Body Weight/kg Mean±SD	Body Height/cm Mean±SD
Treatment Group (n=10)	11,3 ± 0,4	18,19 ± 3,7	40 ± 7,7	147,9 ± 6,6
Control Group (n=10)	11,4 ± 0,5	17,04 ± 4,5	39,1 ± 14,4	150,05 ± 8,1

Data collection in this study used tests and measurements, where a push-up was used to measure arm muscle strength. Measurement of leg muscle strength using a leg dynamometer (Lubis et al., 2021; Mansur et al., 2018; Zainur & Sulastio, 2019). Meanwhile, to measure the strength of

the abdominal muscles using the sit-up test. Technique Subject matching A-B-B-A is a technique of dividing the control group and the treatment group in this study. To test the effect between research variables using t-test regression analysis.

RESULT

In the treatment group and the control group, descriptive research data were obtained which can be seen in table 2 below:

Table 2. Statistical descriptive of research data

Statistik	Control Group						Treatment Group					
	Arm muscle strength		Leg muscle strength		Abdominal muscle strength		Arm muscle strength		Leg muscle strength		Abdominal muscle strength	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Mean	11	9.5	27.9	25	18.7	18.5	10.5	15.8	28.4	38.7	18.4	22.8
Standar deviasi	2.49	2.36	6.52	4.96	5.63	6.68	2.75	3.55	6.09	10.4	2.17	3.35
Min.	8	6	20	20	8	9	6	11	21	28	15	19
Max.	14	14	40	35	29	31	15	20	42	63	22	27

The average pre-test and post-test results of arm strength in the control group decreased from 11 to 9.5, while the treatment group increased from an average of 10.5 to 15.5. The same thing also happened to leg strength, where the average pre-test and post-test in the control group decreased from 27.9 to 25, while the treatment group experienced a fairly high increase in the pre-test and post-test results of 28.4. increased to 38.7. In the average abdominal strength, the results of the pre-test and post-test were also the same as the strength of the arms and the strength of the legs, although only 0.2, it still decreased in the control group and increased by 4.4 in the treatment group. Overall, from arm strength, leg strength, and abdominal strength, the average pre-test and post-test results in the control group decreased, while the average for the treatment group increased. For more details, see the image below.

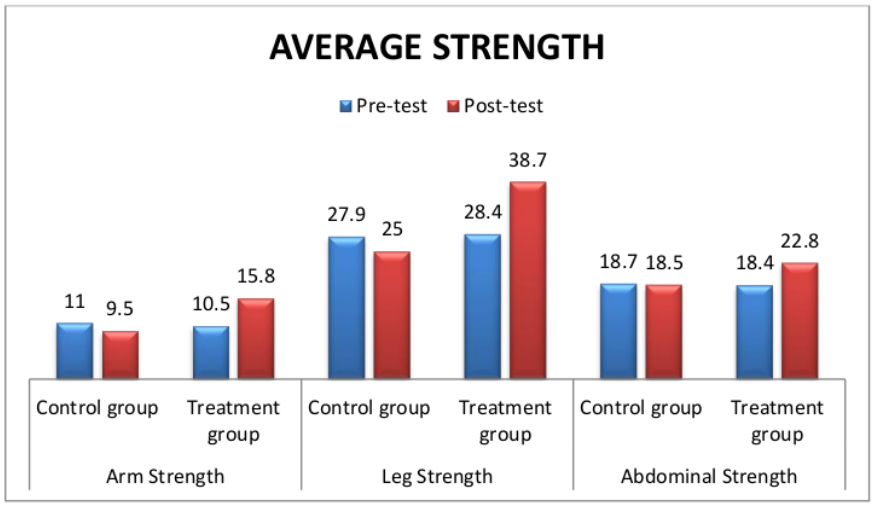

Figure 1. Bar chart average strength

The influence between research variables can be tested using a regression test using the t-test. Before the regression test, the normality test and homogeneity test were carried out as a prerequisite for the regression test. The t-test was used to test the effect of the FIFA 11+ Kids variable on the strength variable. To determine whether there was an increase before and after the treatment was given, a different test was carried out on the average of the pre-test and post-test data (Anam et al., 2021). The next stage is data analysis using paired sample t-test. T arithmetic will be generated from calculating the average and significant difference test sig. (2-tailed) which is helpful for testing the effectiveness and hypotheses. Ho is accepted, and Ha is rejected if p>5%. On the other hand, if Ho is rejected and Ha is accepted, then p<5%. Table 3 presents the calculation of the average difference test of the paired sample t-test.

Table 3. Paired sample test treatment group

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	L1 - L2	-5.30000	1.56702	0.49554	-6.42098	-4.17902	-10.695	9	0.000
Pair 2	T1 - T2	-10.30000	8.42021	2.66271	-16.32346	-4.27654	-3.868	9	0.004
Pair 3	P1 - P2	-4.40000	2.01108	0.63596	-5.83864	-2.96136	-6.919	9	0.000

From table 3, it was obtained that the significance (2-tailed) of the arm muscle strength variable in the treatment group was 0.000 ($p<0.05$). This explains the influence of FIFA 11+ Kids on arm muscle strength, or Ha is accepted and Ho is rejected. It can be concluded that the data from the pre-test and post-test results on arm muscle strength have significant changes. For the results of the significance (2-tailed) the variable leg muscle strength in the treatment group was 0.004 ($p<0.05$). This explains the influence of FIFA 11+ Kids on leg strength, or Ha is accepted and Ho is rejected. These results show that the data from the pre-test and post-test results on leg muscle strength have significant changes. The results of the significance (2-tailed) of the abdominal muscle strength variable in the treatment group was 0.000 ($p<0.05$). It explains that there is an influence of FIFA 11+ Kids on abdominal muscle strength, or Ha is accepted, and Ho is rejected. These results show that the data from the pre-test and post-test results on abdominal muscle strength have significant changes.

DISCUSSION

Football is a sport that requires specific training, so soccer players must have good aerobic fitness, speed, strength, soccer playing skills, and an understanding of basic soccer tactics and strategies (Weda, 2021). The physical condition of strength components becomes the basis for developing other physical elements such as speed, flexibility, explosive power, and balance (Ridwan, 2020). The research results obtained after implementing FIFA 11+ Kids for 12 weeks showed an increase in the muscle strength component of children aged 11-12 years. So that the application of FIFA 11+ Kids can help minimize the occurrence of injuries to footballers by increasing the physical component. The FIFA 11+ Kids warm-up program focuses on improving coordination, and balance, strengthening core and leg muscles, and can assist in recovery (Rössler et al., 2016). The results of Rossler et al. (2019) also explain that the FIFA 11+ Kids program focuses on dynamic stability, core strength, and fall technique.

Strength is the most crucial component of physical condition (HB & Wahyuri, 2019). Many training methods can increase the strength component, either using training aids or using your own body weight (Juntara, 2019). Weak muscle strength is a significant risk factor for injury to child footballers. So it is necessary to carry out the FIFA 11+ Kids warm-up program, which can affect children's neuromuscular performance compared to the usual warm-up program. The FIFA 11+ Kids program improves children's motor performance (Zarei et al., 2018).

The FIFA 11+ Kids warm-up program is an injury prevention exercise developed by the F-MARC International Expert Panel for children aged 7-13 years, which can effectively reduce sports injuries (Zhang et al., 2022). The FIFA 11+ Kids warm-up program pays attention to the developmental characteristics and types of injuries of footballers aged 7-13 years, focusing on improving spatial perception, body stability and proper movement techniques at different ages (Hsu et al., 2017).

The FIFA 11+ Kids warm-up movement consists of exercise 1 to exercise 7, where each exercise has five gradual levels. Of the 7 exercise movements, warm-up focus on improving balance, coordination, stability of the foot and knee joints, maintaining balance, strengthening the core and arm muscles, strengthening the leg muscles, strengthening the core muscles, and the hamstring (Rössler et al., 2015). Exercises 1 and 2, which train body balance, can also affect strength, especially exercises that move the whole body on one leg. Exercises 4, 5, and 6, which focus on muscle strength, maybe the reason for FIFA 11+ Kids' success in improving test results and measuring the strength obtained.

From the literature described by Sumartiningsih et al. (2021) football is one of the sports that has the highest risk of injury. Thus, one way to minimize injuries is to increase the components of high physical conditions (Puspitasari, 2019). Injury prevention programs that combine strength training and neuromuscular control have a beneficial performance effect, reducing injury risk. Strength training and jumping improve neuromuscular control, and these adaptations can help reduce the number

and severity of injuries. In the opinion of Beaudouin et al. (2018) to reduce injuries, FIFA 11+ Kids can improve certain aspects of performance such as isokinetic strength, sprint ability, agility, leg strength, balance, and stability, well as sport-specific skills. So increasing muscle strength can minimize the occurrence of injuries to athletes, which is to increase effective muscle strength by implementing FIFA 11+ Kids.

The results of this study can be used as a reference for football coaches in training programs. Soccer coaches can also use the results of this study to choose an effective way to reduce sports injuries in children. This study was limited to the research sample, namely 20 children, and the age group was 11-12 years old. Future research is expected to conduct further research using a larger sample and different age groups. In addition, further research is also expected to examine more components of physical condition.

CONCLUSION

This research can conclude that FIFA 11+ Kids can be used to increase the muscle strength capacity of children's soccer players. This is based on data analysis showing the effect of FIFA 11+ Kids on increasing arm muscle strength, leg muscle strength, and abdominal muscle strength in children's soccer players. It is hoped that further research will thoroughly examine other components of physical condition and use a larger sample of soccer school students from different age groups.

ACKNOWLEDGMENT

We want to thank the Research Institute for Community Service (LPPM) at Universitas Negeri Semarang for providing and providing research funds to enable the implementation and publication of this research.

Fifa 11+ kids can increase muscle strength: A 12 weeks of treatment

ORIGINALITY REPORT

15%	11%	7%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.scirp.org Internet Source	2%
2	eprints.poltekkesjogja.ac.id Internet Source	2%
3	Wesam Saleh A. Al Attar, Mario Bizzini, Hosam Alzahrani, Saud Alarifi et al. "The FIFA 11+ Kids Injury Prevention Program Reduces Injury Rates Among Male Children Soccer Players: A Clustered Randomized Controlled Trial", Sports Health: A Multidisciplinary Approach, 2022 Publication	2%
4	Achmad Suparto, Hari Setijono, Oce Wiriawan. "Wpływ ćwiczenia całkowitego oporu ciała na siłę, moc i wzmocnienie stabilności", Sport i Turystyka. Środkowoeuropejskie Czasopismo Naukowe, 2019 Publication	2%
5	mail.mjltm.org Internet Source	1%

6	digitalcommons.cwu.edu Internet Source	1 %
7	Garuda.Kemdikbud.Go.Id Internet Source	1 %
8	www.ncbi.nlm.nih.gov Internet Source	1 %
9	doaj.org Internet Source	1 %
10	repozitorij.uni-lj.si Internet Source	1 %
11	Mostafa Zarei, Parisa Namazi, Hamed Abbasi, Mahshid Noruzyan, Sara Mahmoodzade, Tohid Seifbarghi. "The Effect of Ten-Week FIFA 11+ Injury Prevention Program for Kids on Performance and Fitness of Adolescent Soccer Players", Asian Journal of Sports Medicine, 2018 Publication	1 %
12	Submitted to University of Central Lancashire Student Paper	1 %
13	Mostafa Zareei, Parisa Namazi, Hamed Abbasi, Mahshid Noruzyan, Sara Mahmoodzade, Tohid Seifbarghi. "The Effect of Ten-Week FIFA 11+ Injury Prevention Program for Kids on Performance and Fitness	1 %

of Adolescent Soccer Players", Asian Journal of Sports Medicine, 2018
Publication

14	Submitted to Mahidol University Student Paper	1 %

Exclude quotes	Off	Exclude matches	< 1%
Exclude bibliography	On		