

Effectiveness of FIFA 11+ Protocol on Physical Performance among Amateur Football Players

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Abstract

Background: Warm-up exercises play a crucial role in enhancing physical performance in sports. They improve body movements and awareness, leading to greater dynamism, heightened reflexes, and improved balance. Despite their importance, warm-up protocols are often neglected by amateur athletes, increasing the risk of injury and poor performance.

Aims: This study aims to evaluate the effectiveness of the FIFA 11+ warm-up protocol in improving agility, leg power, and skill levels among amateur male football players aged 19-24 years.

Study Setting & Design: The study was conducted with 15 male amateur football players within the age group of 19-24 years, all of whom engaged in sports for a minimum of one hour per day, five days a week. A pre- and post-intervention design was utilized to evaluate the effects of the warm-up protocol over a three-week period.

Methods and Material: Participants underwent three assessments, Vertical Jump Test, Wall-Volley Test, and Agility T Test, both prior to and following a three-week intervention of the FIFA 11+ warm-up protocol (20 minutes per session, 7 days a week). Ethical approval was obtained, and subjects meeting inclusion criteria were selected for the study.

Statistical Analysis: Statistical analysis was performed using paired t-tests to compare pre- and post-intervention results for all assessments, determining the significance of improvements observed.

Result: The analysis revealed significant improvements across all tests: the Agility T Test showed a mean difference of 10.61 ($p=0.00001$), indicating enhanced agility; the Vertical Jump Test exhibited a mean difference of 14.93 ($p=0.00002$), reflecting substantial increases in leg power; and the Wall Volley Test demonstrated a mean difference of 13.43, indicating improved skill and accuracy in kicking.

Conclusion: The FIFA 11+ warm-up protocol notably improves agility, leg power, and skill levels in amateur football players. Incorporating structured warm-up routines is crucial for enhancing physical performance and minimizing injury risk, underscoring the importance of greater awareness and commitment to these practices among amateur athletes.

Keywords: FIFA 11+; Warm-up protocol; Skill levels; Physical performance; Injury prevention.

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INTRODUCTION

Soccer, though the name of the sport is not universal. It has been reported that more than 200,000 professional and 240 million amateur players play football. Compared with other sports, Soccer is a vigorous sporting activity and requires skill and technique, Speed / Quickness, Analytic & Tactical Ability, Agility, Balance & Coordination, Motivation & Self Confidence, Coping with Pressure Situations, Reaction Time, Aerobic Endurance, Strength & Power, Flexibility, Body Size and Composition.¹

Soccer players need moderate to high levels of both aerobic and anaerobic power, along with strong agility and a range of technical and tactical skills to increase their chances of success in the sport. To meet the physical demands of gameplay, training should include components such as anaerobic power, speed, and agility. Warm-ups are typically necessary to prepare athletes for training or matches. These programs consist of low to moderate exercises designed to improve performance by boosting blood flow, muscle elasticity, and neural activity.⁴

An important part is periodic health evaluation (PHE), which is commonly referred to as the 'screening exam'. Identifying potential risk factors for injury and illness is essential. Sporting authorities must prioritize athlete health, especially given the high risk of injury, illness, and potential long-term health issues associated with professional sports. Soccer-specific warm-up programs are designed to enhance the overall fitness of players while addressing intrinsic risk factors like strength and balance. Research indicates that the exercises in comprehensive warm-up programs can enhance athletic performance in male soccer players.²

Previous injury and inadequate rehabilitation are commonly suggested to be risk factors for football injuries justifying the adoption of an injury prevention program such as the Federation Internationale de Football Association (FIFA) 11+.⁶ The identification of shortcomings in previous programs prompted FIFA to create the 11+ program, which features heightened intensity and additional exercise components aimed at enhancing the physical performance of soccer players. Therefore, further investigation into the impact of this improved version of the 11+ program on soccer players' physical performance is warranted.³

Improvement in physical performance would

maintain the health of player, minimize costs, and also enhance performance throughout game. The FIFA 11+ injury prevention program was created in 2006 to tackle this issue, spearheaded by the FIFA Medical Assessment and Research Centre in partnership with the Oslo Sports Trauma Research Center and the Santa Monica Orthopedic and Sports Medicine Center. This program consists of a comprehensive warm-up routine designed to prevent injuries in soccer players.⁴

The FIFA 11+ is a comprehensive, soccer-specific warm-up program designed to enhance the overall fitness of players while addressing intrinsic risk factors such as strength and agility. Research has demonstrated that the exercises within these multifaceted warm-up programs can enhance athletic performance in male soccer players. Specifically, improvements have been observed in counter movement jump height (Sotiropoulos *et al.*, 2010), isokinetic strength (Brito *et al.*, 2010; Daneshjoo *et al.*, 2012), and sprint performance (Fletcher and Jones, 2004). Additionally, core stability exercises are a crucial part of these warm-up routines, contributing to better technical skills and overall game awareness (Holm *et al.*, 2004; Leetun *et al.*, 2004; Paterno *et al.*, 2004). Therefore, it is reasonable to expect that a multifaceted warm-up program can enhance physical performance and lower the risk of injuries.⁵

METHODS

This experimental study was conducted over a six-month period on a population of amateur male football players between the ages of 19 and 24, with a sample size of 15 participants. The protocol duration lasted three weeks, with each session lasting 20 minutes. Participants were included if they had at least one year of playing experience and participated in sports for a minimum of one hour each day, five days a week.

Exclusion criteria were set to ensure safety and validity, disqualifying individuals with current injuries or any degenerative, inflammatory, musculoskeletal, or neuromuscular conditions affecting the upper or lower extremities, as well as those with cardiorespiratory insufficiency. Materials utilized in the study included chalk, a soccer ball, measuring tape, cones, and a stopwatch. Outcome measures consisted of the Vertical Jump Test, Wall-Volley Test, and Agility T Test to assess physical performance variables relevant to football.

The ethical approval was taken from the

committee and the subjects who fulfilled the criteria were taken for study. The aim of the study was explained to the subjects and the consent was taken from them. They were screened with three test prior and post the warm up protocol, the tests were as follows:

Agility T-Test: For the test administrator, four cones were arranged in a “T” formation. Cones A and B were placed 10 yards (9.14 m) apart, while cones B and C, as well as cones B and D, were each set 5 yards (4.57 m) apart. The participant starts at cone A. On the timer’s command, the participant sprints to cone B and touches its base with their right hand. Next, they shuffle left to cone C and touch its base with their left hand. They then shuffle right to cone D, touching its base with their right hand, before shuffling back to cone B to touch it with their left hand. Finally, they run backward to cone A, and the stopwatch is stopped when they pass cone A. Scoring is based on the time taken to complete the test, with participants ranked as poor, average, good, or excellent based on their performance in seconds.

Vertical Jump Test: This test assesses leg power, which is crucial for activities like jumping over obstacles and moving heavy objects. The participant starts by standing sideways to the wall with their heels together and reaching up as high as possible. The maximum standing reach is recorded. Then, using a rocking, one-step approach (step-feet together-jump), the participant jumps as high as they can while reaching upward. The maximum jumping reach is noted. The score is determined by the difference in inches between the standing reach and the jumping reach, measured to the nearest half inch. The best result from three attempts is used as the final score.

Wall-Volley test: This test is a standardized assessment with high reliability (ICC=0.97) for evaluating soccer players’ kicking skill and

accuracy (Reilly and Holmes, 1983). Participants were instructed to kick a ball against a wall and then either trap or kick the rebound as many times as possible within a 30-second interval. They could kick the ball from either the air or the ground, but they were prohibited from using their arms or hands. Each participant completed three sets of the test, with the best attempt being used for analysis.

The FIFA 11+ Warm-Up Protocol was implemented over three weeks, with sessions occurring seven days a week for twenty minutes each. The 11+ program consists of three parts:

1. The first part includes running exercises.
2. The second part features six exercises, each designed with three levels of difficulty to enhance strength, balance, muscle control, and core stability.
3. The third part comprises advanced running exercises.

The varying difficulty levels improved the program’s effectiveness, allowing coaches and players to customize it to their individual needs. Replacing the typical warm-up routine, the 11+ takes about 20-25 minutes to complete. Overall, the program includes 27 exercises that emphasize core stability, neuromuscular control, eccentric hamstring strength, and agility.

RESULTS

The study consisted of 15 samples which comprised 15 amateur male players who were assessed on three tests- Agility T test, Vertical Jump Test And Wall Volley Test.

The mean value between the age group of the players included in the study. Out of 15 soccer players the most common age of players assessed was 21.2 years.

The 11+

PART 1 RUNNING EXERCISES · 8 MINUTES

- 1 RUNNING STRAIGHT AHEAD**
The cones form up a T to 10 yards or parallel lines, approx. 5-6 m apart. Two players start at the same time from the first pair of cones. They together arrive to the last pair of cones. On the way back, you can increase your speed progressively as you warm up. 2 sets.
- 2 RUNNING HIP OUT**
Walk in a zig-zag stepping each pair of cones to hit your knee and rotate your hips/shoulders. Alternate between left and right legs at successive cones. 2 sets.
- 3 RUNNING HIP IN**
Walk in a zig-zag stepping at each pair of cones to hit your knee and rotate your hips/shoulders. Alternate between left and right legs at successive cones. 2 sets.
- 4 RUNNING CIRCLING PARTNER**
Run forwards at a pair to the first set of cones. Shuffle sideways by 90 degrees to meet in the middle. Shuffle an anti-clockwise circle around one another and then return back to the cones. Repeat for each pair of cones. Remember to stay on your toes and trap your centre of gravity low by bending your hips and knees. 2 sets.
- 5 RUNNING SHOULDER CONTACT**
Run forwards in pairs to the first pair of cones. Shuffle sideways by 90 degrees to meet in the middle then jump sideways towards each other to make shoulder-to-shoulder contact. Note: Make sure you land on both feet with your hips and knees bent. Do not let your knees buckle inward. Make a full jump and synchronise your timing with your team-mate as you jump and land. 2 sets.
- 6 RUNNING QUICK FORWARDS & BACKWARDS**
As a pair, run quickly to the second set of cones then run backwards quickly to the first pair of cones keeping your hips and knees slightly bent. Jump repeatedly to the first, second and third cones and one final backwards. Remember to take small, quick steps. 2 sets.



Fig. 1: The Fifa 11+ Warm Up Protocol

Fig. 1 shows the mean value of differences between the Pre and Post results of Agility T Test after The intervention of Fifa 11+. It shows the value of Pre agility T Test as 10.61 and Post Agility T Test as 9.87 which indicates the agility was improved after the intervention of Fifa 11+ Warm Up Protocol.

The mean difference between the pre agility test values and post agility test values in this study where $p=0.00001$. Hence the test is significant.

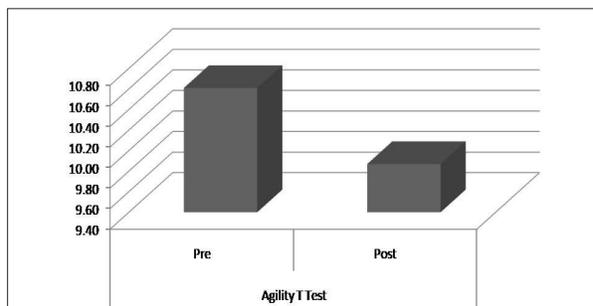


Fig. 2: Pre & Post values of Agility T test

Fig. 2 depicts the mean value of differences between the Pre And Post Results of the Vertical Jump Test after the intervention of Fifa 11+. It Shows the value of Pre Vertical Jump Test as 14.93 and Post Vertical Jump Test as 16.36 which Indicates the Leg Power was drastically improved after the intervention of Fifa 11+ Warm Up Protocol.

The Mean Difference between the Pre Vertical Jump Test Values And Post Vertical Jump Test Values where $p=0.00002$. Hence the test is significant.

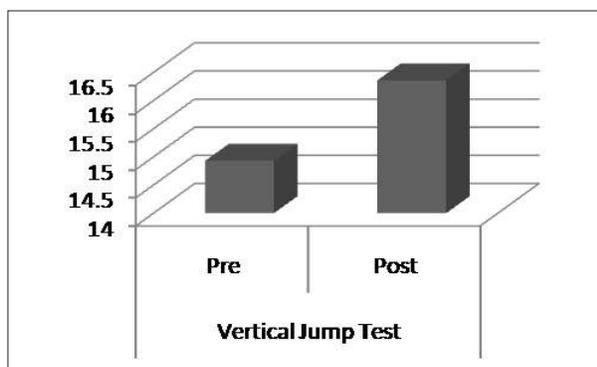


Fig. 3: Pre & Post values of Vertical Jump test

Fig. 3 depicts the mean value of differences between the Pre And Post Results of Wall Volley Test after the intervention of Fifa 11+. It shows The value of Pre Wall Volley Test as 13.43 and Post Wall Volley Test as 15.20 which indicates the Skill and Accuracy of Kicking the Ball was improved after the intervention of Fifa 11+ Warm Up Protocol.

The Mean Difference between the Pre Wall Volley Test Values And Post Wall Volley Test Values where $p=3.4964$. Hence the test isn't significant.

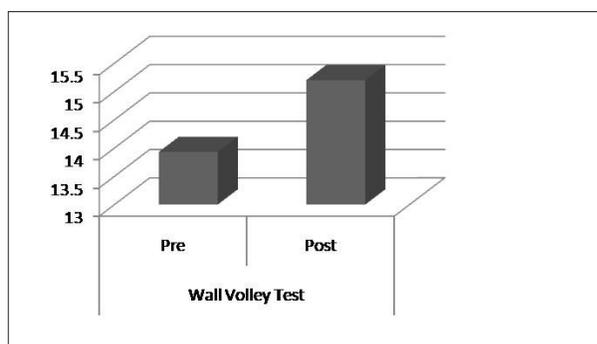


Fig. 4: Pre & Post values of Wall Volley Test

DISCUSSION

The current study examined the impact of the FIFA 11+ Warm-Up Protocol on improving physical

performance in amateur soccer players. There is a notable lack of literature addressing the specific benefits of this protocol on key physical metrics such as agility, leg power, skills, and accuracy in soccer. Given that many amateur players often engage in the sport without structured training or prior conditioning, this study sought to address that gap by evaluating the effects of the FIFA 11+ protocol on the physical abilities of participants. Our results show a significant improvement in physical performance and soccer skills after implementing the FIFA 11+ Warm-Up Protocol. In particular, the findings from the Agility T-Test, Vertical Jump Test, and Wall Volley Test revealed notable gains in agility, leg power, and kicking accuracy following the intervention.

The exercises in the FIFA 11+ protocol have been shown to improve knee joint position sense, boost oxygen uptake, and decrease lactate levels, all of which enhance thermoregulation and overall athletic performance. Furthermore, the running exercises incorporated in the protocol promote improved body awareness and dynamic movement, leading to enhanced reflexes and balance. Consequently, these adaptations improve leg extensor power and lower limb force production, thereby enhancing agility.

This aligns with the findings of AChaalali *et al.*, whose research on agility training in elite young soccer players highlighted significant improvements in linear sprinting ability. Their results suggest that specific agility drills can lead to enhanced athletic and cognitive performance, supporting our conclusions about the benefits of structured warm-up protocols.

Effects on Leg Power

In terms of leg power, the combination of plyometric, running, and balance exercises within the FIFA 11+ protocol has improved the force production capabilities and neuromuscular control. Our results corroborate the work of Silva *et al.* (2015), which indicated that the FIFA 11+ protocol significantly enhances the neuromuscular parameters critical for soccer performance, including vertical jump capabilities.

Effects on Skills and Accuracy

Additionally, the FIFA 11+ protocol facilitates improvements in technical skills, such as ball control, kicking precision, and overall concentration. These attributes are vital for soccer performance

and are developed through the physical fitness training involving ball-related activities inherent in the protocol. Dr. Gopal Chandra Saha and Dr. Hiralal Adhikar's research supports this, noting the positive effects of soccer-specific training on general skills, including volleying.

Furthermore, the findings from Rahnama *et al.* reinforce our conclusions, indicating that the FIFA 11+ program positively impacts leg power, agility, and performance in skills tests like the Wall Volley Test in soccer players.

In summary, this study contributes important insights to the existing literature on the FIFA 11+ Warm-Up Protocol, highlighting its effectiveness in enhancing the physical performance of amateur soccer players. Given the clear benefits observed, it is advisable for coaches and trainers to integrate this protocol into their training regimens to optimize player performance and reduce the risk of injury.

CONCLUSION

The FIFA 11+ warm-up protocol significantly improves agility, leg power, and skill levels in amateur football players. Implementing structured warm-up routines is crucial for enhancing physical performance and minimizing injury risk, emphasizing the importance of greater awareness and compliance with these practices among amateur athletes.

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