Indonesian Journal for Physical Education and Sport
https://journal.unnes.ac.id/sju/index.php/inapes
e-ISSN 2774-4434 | inapes@mail.unnes.ac.id
https://doi.org/10.15294/inapes.xxxx

# The Effect of Frog Jump Training on the Long Pass Ability of SSB Putro Wiroto KU-17 Players

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**Received:** 2 April 2026 **Accepted:** 9 April 2026 **Published:** 12 May 2026

**Abstract**
This study examines the effect of frog jump training on long pass ability in SSB Putro Wiroto soccer athletes, Wiradesa, Pekalongan Regency, in 2026. This topic was chosen because there are still many SSB Putro Wiroto KU-17 athletes who have limitations in mastering this technique due to the lack of explosive leg muscle strength. This study aims to determine the effect of frog jump training on increasing the results of long passes in SSB Putro Wiroto KU-17 athletes in Pekalongan Regency. The method used is an experiment with a Pretest-Posttest One Group Design design consisting of 33 athletes. This research instrument uses a long pass test to measure the kick distance before and after treatment. Data analysis uses prerequisite tests (normality and homogeneity) and hypothesis testing through Paired Sample T-Test. The results show a significant effect of frog jump training on long pass ability. This is evidenced by the t-count value (3.920) > t-table (2.32) and a significance of 0.000 < 0.05. The average distance increased from 36.42 to 37.91 meters in the posttest, representing a 3.93% increase. The conclusion of this study is that frog jump leg muscle training is effective in increasing the explosive power of leg muscles needed to maximize long passing.

**Keywords**: football; frog jump; long pass; leg muscles; plyometrics

## 1. Introduction

Kicking is a crucial skill for a football player. Kicking can be used to pass the ball to teammates from various distances and to shoot the ball into the goal (Wahyudi 2020). Long pass is often used to provide a pass in front of the goal, the contact between the foot and the ball in a long pass is the tip of the foot. The key is to position the knee of the leg used slightly bent and when contacting the ball straighten the leg by swinging, at that time the body position should not lean forward or bend but the body position must lean forward so that the ball can bounce perfectly. Therefore, I conducted this on Friday, November 1, 2024, during a training session on the Wiradesa village field, Wiradesa District, Pekalongan Regency. In-depth discussions with SSB coach Putro Wiroto revealed that the current training program still focuses on basic short passing and ball control techniques. The coach acknowledged the need for specific variations in physical training to improve leg muscle strength.

Football is a simple game but it holds many surprising stories and is also quite an interesting game for anyone (Wildani and Gazali 2020). Football entered Indonesia on April 19, 1930, marked by the founding of the All-Indonesia Football Association (PSSI) in Yogyakarta, led by Soeratin Sosrosoegondo. During a congress in Solo, the name was changed to the All-Indonesia Football Association. Since then, PSSI has frequently organized football events, and more and more people have joined in playing on the streets and squares where the First Football Association Competition was held. As a form of support for the rise of "National Football," Paku Buwono X built the

Sriwedari Stadium, making Indonesian football even more well-known (Agustina 2020). Soccer players must also master and understand all the basic techniques of soccer, including techniques with and without the ball. Ball techniques involve all movements using the ball, such as dribbling, kicking, heading, and controlling the ball (Ridwan, Supriatna, and Hidasari 2020).

According to the opinion (Joseph A. Luxbacher in (Nahon, Silva Lopes, and Monteiro de Magalhães Neto 2021)) Passing means the activity of passing to a teammate, and passing is also divided into two, namely underhand passing and overhand passing. Passing the ball is one of the techniques that must be mastered by footballers, because based on its function, passing can be used as a way to pass or give the ball to teammates in various conditions at various distances and shoot at the opponent's goal. Long passes must be fully mastered by footballers, therefore systematic, structured and regular training is needed, in order to improve long passing skills in achieving maximum performance in every championship or match. including frog jump training. (Belli, Friansyah, and Remora 2021) Frog jump exercise is an exercise that starts with the legs opened shoulder-width apart like a squat, and is done by swinging the arms back and the body moving in the opposite direction followed by the legs then jumping forward as far as possible.

The title of this paper, about the influence of frog jump training on long pass skills, is based on direct observation in SSB Putro Wiroto matches, which found that many students or children still lack mastery of long pass techniques, thus hampering attacks because students seem to have difficulty directing the ball to teammates in the far area or fail to provide sufficient explosive power so that the ball is easily intercepted by the opponent. In modern football, a long pass is not just kicking the ball long, but a strategic technique for counterattacking or changing the direction of the game quickly. The lack of mastery of this technique at SSB Putro Wiroto indicates that there are physical or technical aspects that need to be improved. Through in-depth discussions with SSB Putro Wiroto coaches, it was revealed that the current training program still focuses on basic short passing techniques and ball control. The coach acknowledged the need for a variety of specific physical exercises to increase leg muscle strength. One method that emerged in the discussion was the application of Frog Jump training. The coach believes that with the characteristic jumping movement resembling a frog, the large muscles in the legs will be trained to produce the explosive power needed for long-range kicks.

The author found a problem in the form of many players who have good ball handling skills but not the ability to pass long. To achieve a victory or achievement must master all basic techniques, one of which is long passing. Training methods that are less creative and innovative are one of the factors where children often make mistakes in executing long passes in playing soccer. Sourced from the opinion above regarding the importance of the method of training the pass for soccer players, therefore coaches need to choose which training method to use to help improve passing technique. The frog jump training pattern I chose based on several articles I have read and one of the training methods I used when I was 16 years old, therefore I want to provide a little training on leg muscle strength with frog jump training for all SSB participants, as a form of supporting training that can help a little to improve long pass skills.

The difference between this study and previous studies lies in the research variables that took place at SSB Putro Wiroto which only focused specifically on the effect of frog jump training, which compared it with conventional training models. The gap or gap with previous studies was found in the comparison of two types of plyometric training in the first study, while in this study, we wanted to see the extent of the effect of frog jump training on long pass ability compared to the

conventional training pattern that had been applied at SSB Putro Wiroto. Updates in this study are in the research target which focuses on 17 years old, this study also explicitly links the weakness of leg muscle power with the frequent failure of the counter attack strategy applied at SSB Putro Wiroto. This study used one research instrument, namely: the stomach passing test, which is a stomach passing test towards a rectangular area target. The test consists of an initial test (pre-test), treatment (treatment) and a final test (post-test).

## 2. Method

Theoretically, saturation sampling is a sampling technique in which all members of the population are used as research subjects. This technique was chosen to minimize generalization errors and ensure that the data obtained represents the real conditions at the research location. This is in line with the opinion of (Sugiyono 2010) which states that saturated sampling is often used if the population is relatively small (less than 30 people) or the researcher wants to make generalizations with a very small error rate. In addition, (Kholifah, Heryana, and Nugraha 2023) emphasizes that if the number of research subjects is less than 100, it is better to take all of them so that the research is a population study.

The instrument used was a long-distance ball kicking ability test (long pass) with a measurement unit of meters. Data collection in this study used a pre-test and post-test, followed by frog jump training for one and a half months, performed three times a week with four sets of fifteen repetitions each. The collected data were then analyzed using descriptive statistics and hypothesis testing through a paired sample t-test. Before the hypothesis test was conducted, prerequisite tests were first conducted, including a normality test using the Shapiro-Wilk method, considering the number of research samples was 30 respondents (less than 50 respondents (de Souza et al. 2023).

## 3. Result

### Descriptive

**Tabel 1. Deskriptif test**

| Group | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Pretest | 33 | 24,56 | 45,66 | 36,4252 | 5,15322 |
| Posttest | 33 | 27,12 | 50,20 | 37,9188 | 5,48702 |

The results of the study are described using descriptive analysis as follows, for the pretest results the minimum value = 24.56, maximum value = 45.66, average (mean) = 36.42, with standard deviation (std Deviation) = 5.15. While for the post-test the minimum value = 27.12, maximum value = 50.20, average (mean) = 37.91, with standard deviation (std Deviation) = 5.48.

### Prerequisite Test
### Normality

**Tabel 2. Normality test**

| Group | Nilai Sig. (p-value) | Explanation |
|---|---|---|
| Pretest Frog Jump | .477 | Normally Distributed |
| Posttest Frog Jump | .432 | Normally Distributed |

Based on the statistical test results, the data obtained from 33 students all had a significance value above 0.05. This proves that all data in the study is normally distributed, meaning all values are spread throughout and there are no data that are too extreme. With normal data conditions, it can

be concluded that there is a consistent relationship between frog jump training and long pass ability, which is proven to be a normal and ideal foundation for athletes to develop good long pass skills.

**Homogeneity**

**Tabel 3. Homogeneity test**

| Research Variables | Value Sig. (p-value) | Explanation |
|---|---|---|
| FROG JUMP | .755 | Homogen |

From the table above, it can be seen that all sig. p values are > 0.05, indicating that the data is homogeneous. Because the data is homogeneous, data analysis can be continued with statistics.

**Hypothesis Testing**

**Tabel 4. T-test**

| Group | Average | T-test for Equality of means | | | | |
|---|---|---|---|---|---|---|
| | | t ht | t tb | Sig | Difference | % |
| Pretest | 36.4252 | 3.920 | 2.32 | 0.000 | 1.49364 m | 41 |
| Posttest | 37.9188 | | | | | |

From the t-test results, it can be seen that the calculated t is 3.920 and the t table is 2.32 (df 32) with a significance value of p of 0.760. Therefore, the calculated t is 3.920 > t table 2.23, and the significance value is 0.000 < 0.05. So these results indicate a significant difference. Thus, the alternative hypothesis (Ha) which states "There is an influence of frog jump training on the results of the distance of the lob pass in the SSB Putro Wiroto KU-17 game", is accepted. This means that frog jump training has a significant influence on the results of the distance of the lob pass in soccer games for SSB Putro Wiroto KU-17 athletes. From the pretest data, the average was 1,202.03 meters, and at the time of the posttest, the average reached 1,251.32. The magnitude of the increase in the distance of the lob pass can be seen from the difference in the average value, which is 49.29 meters, with a percentage increase of 41%.

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## 4. Discussion

Based on the data analysis conducted by the researchers, significant improvements were found in the sample studied. The treatment, administered over 16 sessions, three times a week, significantly improved the distance of long passes in soccer for SSB Putro Wiroto KU-17 athletes.

Based on the results of the data analysis using a Paired Sample T-Test, a significant difference was found between the long pass abilities of SSB Putro Wiroto U-17 athletes before (pretest) and after (posttest) the frog jump training. This increase in average scores indicates that frog jump training has a significant positive effect on the accuracy and distance of long passes. Theoretically, this

occurs because frog jumps are a form of plyometric training that focuses on explosive power in the leg muscles (Hernandez-Martinez et al. 2025). When performing a frog jump, the quadriceps and gastrocnemius muscles undergo a rapid eccentric contraction followed by a concentric contraction, which directly increases the power of the kick.

In the U-17 age group of athletes at SSB Putro Wiroto, long pass ability is highly dependent on stability of support and leg swing strength. Through a measured training program, the large muscles in the lower body undergo neuromuscular adaptations, making energy transmission from the legs to the ball more efficient. This research finding aligns with the training principle that optimal leg muscle strength is the key to executing long passes, enabling the ball to travel at the desired speed and trajectory. (Darragi et al. 2024). Thus, the implementation of frog jump training can be recommended for SSB Putro Wiroto coaches to improve the technical quality of players, particularly in game schemes that rely on counterattacks or long-distance ball movement.

The results of the study showed that frog jump training affected the distance of high passes in soccer for SSB Putro Wiroto KU-17 athletes, with a calculated t-value of 3.920 > t-table 2.32, a significance value of 0.000 < 0.05, and a percentage increase of 3.93%. Polyometric training is appropriate for improving jumping ability because jumping is a type of fast and explosive training that guides the balance between strength and speed, the dominant elements of power. In this exercise, muscles are required to work against a load that is done repeatedly and continuously at a rapid pace. The load for polyometric training is one's own body weight (internal load). The polyometric training implemented involves jumping movements, which are performed quickly and explosively to increase muscle strength and speed. (Komarudin 2021).

Plyometric training can be used to increase power in the form of a combination of isometric and isotonic (eccentric-concentric amortization) exercises combined in one cycle called the Stretch Shortening Cycle. (Zheng et al. 2025). Stretching occurs suddenly before the muscle contracts again or an exercise that can allow the muscles to reach maximum strength in a very short time, perhaps through adaptation of muscle spindles and increasing the ability of motor units to receive stimuli to achieve Behavioral Adaptation of Neuromuscular Skeletal (Prokopidis et al. 2023).

Markovic's research (Prokopidis et al. 2023) concluded that plyometric training can increase leg power with results in depth jumps of 87%, knee tuck jumps of 85%, squat jumps of 47%, and drop jumps of 47%. Evidence base states that there is a very significant increase in leg power in the application of plyometric training in the depth jump of 82% and knee tuck jump of 84%.(Akbar 2021). The dosage of plyometric training application is for 6 weeks, 3 times per week, 2–3 sets with 8–12 repetitions with a rest period of 2–3 minutes between sets.

## 5. Conclusion and Recommendation

This study successfully demonstrated that frog jump training significantly improved long pass ability in Putro Wiroto U-15-17 SSB players. These results address the research objective: there is a positive correlation between explosive power in leg muscles generated through plyometric mechanisms and the effectiveness of the distance and speed of the ball during long passes. Biomechanically, the stretch-shortening cycle, also known as the stretch-shortening cycle, strengthens the quadriceps and gluteus muscles. These muscles are the primary drivers for generating significant momentum when the leg impacts the ball.

Based on the research conducted by the researchers, there is a significant effect of frog jump training on improving long pass ability in Putro Wiroto U-17 SSB athletes. Several recommendations can be made, including: Coaches should provide more varied training to reduce training boredom and support the achievement of high pass performance in Putro Wiroto U-17 SSB athletes.

Athletes at SSB Putro Wiroto U-17 need to improve their training discipline, which is expected to enable them to carry out frog jump exercises consistently and consistently, as well as conduct self-evaluations. This is not limited to the time of this research, as increasing muscle strength requires a continuous adaptation process to maintain the quality of their long passes. Coaches are also expected to pay attention to proper technique. Given that frog jumps are a high-intensity plyometric exercise, athletes are advised to always pay attention to proper landing technique to avoid the risk of serious injury.

Future researchers are expected to expand this study by including several additional relevant variables to provide a more comprehensive understanding of the elements that influence long pass or lob pass ability. Furthermore, researchers are expected to increase the number of study subjects to better reflect real-world conditions. They are also expected to compare the effectiveness of frog jump training with other plyometric exercises, such as box jumps and depth jumps, to determine which training method is most optimal for improving long pass ability.

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