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The Effect of Leg Press and Leg Extension Exercises on Long Passing in Football Players Citra Pratama U-15 Football School

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Abstract

This study aims to determine the effect of leg press and leg extension training on long passing ability in Citra Pratama U-15 football athletes. The research method used is an experiment with a two-group pretest-posttest design. The research sample consisted of 20 athletes divided into two groups, each receiving leg press or leg extension training for six weeks. The instrument used was the Barrow Long Distance Kick Test to measure long passing ability before and after treatment. Data analysis was carried out using the Shapiro-Wilk normality test, Levene's homogeneity test, paired t-test, and independent t-test with a significance level of 5%. The results showed: (1) Leg press training had a significant effect on increasing long passing (sig. 0.000), with an average increase of 32%. (2) Leg extension training also had a significant effect on long passing (sig. 0.000), with an average increase of 37%. (3) There was a significant difference in effect between the two exercises (sig. 0.007), where leg extension training provided a greater increase than leg press. In conclusion, both types of training are effective in improving long passing ability, but leg extension is superior in providing increased distance and shooting accuracy in U-15 football athletes.

How to Cite

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INTRODUCTION

Football is a team sport that requires good team coordination and a strong mastery of basic technical skills. Basic skills such as kicking, stopping, dribbling, and heading the ball are the foundation that determines a player›s performance on the field (Sudirman, 2023).. Among these techniques, passing is a vital component because it connects the lines of play. Passing is divided into two main types: short passes and long passes, both of which play a strategic role in building attacks and defense (Dharmawan et al., 2023).

Long passes serve a tactical purpose: opening up space, overcoming opposing pressure, and creating scoring opportunities (Sutra et al., 2022). This technique requires a combination of leg muscle strength, precise shooting, and an understanding of the game situation. In modern football, accurate long passes are often the difference between a team with average play and one capable of playing at a high competitive level (Pristiansyah et al., 2022).

Technically, executing a long pass requires proper foot placement, ball contact technique, leg swing, and body position. Inaccuracy in even one aspect can reduce both accuracy and distance. Previous research has shown that leg muscle strength is a dominant factor in determining the effectiveness of a long pass (Ganyarsyah & Supriatna, 2019). Therefore, a training program that specifically improves leg strength and power is crucial in developing football athletes, especially adolescents (Rosdiana et al., 2019).

One method proven effective for developing leg muscle strength is weight training, including leg presses and leg extensions. Leg presses involve pushing weights with both legs, maximizing leg muscle activation, while leg extensions target the quadriceps with a leg-straightening motion that mimics the kicking mechanism (Ihsan Andi, 2024; Wahyuddin, 2015). These exercises have been widely used in physical strengthening programs for athletes in various sports, including football (Andriadi, 2017).

Previous research has shown that leg presses can significantly increase leg muscle strength and explosive power with a relatively low risk of injury because the movement focuses on the legs (Peling, 2011). Meanwhile, leg extensions are considered more specific in mimicking kicking movements, thus providing a more direct transfer of skills to long passing techniques (Bahar Ibnu, 2011). However, comparative studies regarding the effectiveness of these two types of training on long passing ability in adolescent football athletes are still limited, creating an important research gap to fill.

This condition is increasingly relevant to the development of athletes at Football Schools, including Citra Pratama u-15 Football School, where initial observations indicate suboptimal long passing quality. This impacts the effectiveness of team play, particularly in building quick attacks and exploiting empty space in the opponent›s defense. Therefore, measurable, evidence-based training interventions are needed to address this weakness.

The novelty of this study lies in directly examining the differences in the effects of leg press and leg extension training on the long passing ability of 15-year-old football athletes, a study that previously focused on general leg strength or power variables without specifically linking them to technical skills. Therefore, this study is expected to provide an empirical contribution to designing more effective and specific training programs for developing long passing skills.

Furthermore, this study adopted an experimental approach with a two-group pretest-posttest design, allowing for more accurate analysis of differences in training results. The use of the Barrow Long-Distance Kick Test as a measuring tool also provided an objective standard for assessing long passing ability before and after treatment, ensuring the validity of the research results (Setyawan, 2019).

METHOD

This study used an experimental method with a two-group pretest-posttest design to compare the effectiveness of leg press and leg extension exercises on long passing ability (Sugiyono, 2015). The study population was all 30 athletes from Citra Pratama U-15 Football School. A sample of 20 athletes was selected using a purposive sampling technique with the following criteria: male, 15 years old, actively training at Football School, having weight training experience, and suboptimal long passing ability (Priyatama, 2016). The sample was divided into two treatment groups, each consisting of 10 people.

The measurement instrument used was the Barrow Long-Distance Kick Test, which has a validity of 0.978 and a reliability of 0.989 (Setyawan, 2019). The test is conducted by placing a ball at a fixed point, then participants kick the ball as far as possible. The distance is measured from the kick point to the point where the ball first fell using a tape measure, and each participant was given three attempts, with the best result

being taken (Agung, 2013). This instrument was chosen because it can directly measure long passing ability in the context of a football game.

The study was conducted over six weeks with a frequency of two training sessions per week. Each session began with a warm-up, continued with core exercises, and ended with a cool-down. The leg press group trained using a leg press machine with a progressive load of 30–80% 1RM according to the guidelines of (Ibañez et al., 2005) , while the leg extension group trained using a leg extension machine with a similar pattern and intensity. Pretest and posttest data were analyzed using a paired sample t-test to test the effect of each exercise, and an independent sample t-test to compare differences between groups, with a 5% significance level using SPSS version 25 (Fadluloh et al., 2024).

RESULTS AND DISCUSSION

The data from the leg press and leg extension exercises showed that the average pretest score with leg press exercises was 21.663 and the posttest score was 36.246. Meanwhile, the average pretest score with leg extension exercises was 23.367 and the posttest score was 39.959. It can be concluded that leg press and leg extension exercises have improved long-distance kicking ability in U-15 football athletes.

Table 1. Normality Test

	Shapiro-Wilk		
	Statistics	df	Sig.
Pre.LP	0.907	10	0.261
Post.LP	0.950	10	0.671
Pre.LE	0.874	10	0.112
Post.LE	0.888	10	0.163

Based on **Table 1** the sig. value (0.261, 0.671, 0.112, 0.163) > 0.05 is obtained, so Ho is accepted. Therefore, it can be concluded that all data are normally distributed.

The homogeneity test results obtained are sig. (0.249) > 0.05, so Ho is accepted. Therefore, it can be concluded that the variables come from the same variance (homogeneous).

The Paired Sample t-Test sig. value (0.000) < 0.05 is obtained, so Ho is rejected. Therefore, it can be concluded that there is a significant effect of leg press training on long passing.

The Paired Sample t-Test sig. value (0.000) < 0.05 is obtained, so Ho is rejected. Therefore, it can be concluded that there is a significant effect of Leg Extension training on long passing.

The Independent Sample t-Test sig. value (0.007) < 0.05 is obtained, so Ho is rejected. Therefore, it can be concluded that there is a significant difference in the influence between leg press and leg extension exercises on long passing.

Leg press training has been widely studied in relation to improving sports performance, including soccer. According to (Bompa & Haff, 2009), strength training exercises such as the leg press are highly effective in developing lower body muscle strength, which is a crucial element in long-distance kicking or long passing. They stated that maximal leg muscle strength directly correlates with the distance and speed of the ball when kicked. Therefore, leg press training is a recommended method in kicking technique development programs in soccer.

Leg Press training is very good for building leg muscle strength, helping knee and hip joint stability and strengthening muscles (Rachman Ahmad, 2012) By regularly performing leg press exercises, players can increase the strength of the key muscles used in long kicks. Stronger leg muscles generate greater propulsive force when kicking the ball, allowing it to travel farther without losing speed.

This exercise effectively improves lower leg muscle strength because it involves a pushing motion that trains the thigh and calf muscles. With increased muscle strength, players can execute long-range shots (long passes) with more power and accuracy.This Leg Press exercise is done by burdening the body's organs, especially the leg muscles, with an iron weight under the press machine. The intensity, set, frequency and duration of the exercise can produce a training effect, namely in the form of increased strength, power and muscular endurance.(Ihsan Andi, 2024).

According to (Riyadi, 2016)Weight training is a type or form of activity that uses weights, whether isometric, isokinetic, or isotonic. This training can be performed using weights in the form of equipment or the athlete's own body weight. Weight training is widely practiced to improve biomotor power.

ExerciseLeg extensions are effective for long passes because they specifically target the quadriceps, the main muscles in the front of the thigh that play a crucial role in kicking the ball. In long passes, the quadriceps serve as the primary source of power for swinging the leg forward and delivering powerful thrust to the ball. Leg extension exercises strengthen and improve the efficiency of these muscles, enabling more powerful and accurate kicks.

According to (Azrin, 2010), muscle strength is the maximum force exerted by a muscle and can be measured using various methods. Therefore, this strength element must be enhanced according to the needs and characteristics of the sport itself. One example of a sport that requires leg muscle strength and predominantly uses the extremities, involving the quadriceps, hamstring, gluteus, and gastrocnemius muscles, is soccer (SaThierbach et al., 2015) .

Besides strengthening muscles, leg extensions also help improveExplosive strength (power) is essential when players want to send the ball long distances. According to biomechanical principles, the greater the force generated by the quadriceps muscles during contraction, the greater the force transferred to the ball when kicked. Therefore, this exercise helps players send the ball longer distances without losing control or direction.

Leg extensionTargets the quadriceps (front thigh) muscles, which are directly involved in kicking the ball. This exercise helps players increase the strength of muscle contractions when kicking long passes, resulting in greater distance and accuracy.Leg extension exercises are done using a machine called a Leg Extension Machine (Wahyuddin, 2015.)Leg ExtensionVery good for building the front thigh muscles, because it can be concentrated so that other muscles do not work.

The results showed that while both exercises were equally effective, leg extensions had a slightly greater impact on improving long passing ability. This is likely because the leg extension movement more closely resembles the movement of kicking a ball. Leg extensions emphasize quadriceps strength, which plays a crucial role in achieving power. The greater the leg strength, the greater the leg power generated.In line with this opinion, the research results of (Bahar Ibnu, 2011) state that leg extension supports leg muscle strength so that it can produce maximum kicks.

Overall, leg press training offers significant benefits to a soccer player's long passing ability. It strengthens the key muscles involved in the kicking process, improves endurance and muscle control, and helps increase the accuracy and effectiveness of long passes. Therefore, the leg press is a recommended exercise to include in a soccer player's strength training program.

Leg press exercises can increase leg power because they involve pushing, and the only components involved are the leg muscles. Research results (Peling, 2011)The advantages of leg press training include that it is an exercise that can increase strength in the leg muscles, the movements are easier to do, and the risk of injury is smaller because it only focuses on the legs.

Leg extension exercises affect long passing by strengthening the quadriceps, increasing kicking power, maintaining muscle endurance, and aiding movement stability. All of these factors directly contribute to the effectiveness and accuracy of long passes in soccer.

One of the best ways to increase leg, thigh, and leg strength is through leg presses, as well as leg extensions. Both exercises strengthen the leg muscles, particularly the front and back of the thighs, resulting in maximum power output. This aligns with (Kardiman, 2000) research, which states,leg extensionis a weight training exercise that is often used to increase the strength of the thigh muscles, especially the quadriceps muscles.

CONCLUSION

Based on the research results, it can be concluded that both leg press and leg extension exercises significantly improved long passing ability in SSB Citra Pratama U-15 soccer athletes. Leg press exercises have been shown to increase overall lower leg muscle strength, aid joint stability, and enhance the propulsion required to produce powerful and accurate long-range kicks.

Meanwhile, leg extension exercises have a slightly greater effect because the movement more closely resembles the kicking pattern of a ball, directly strengthening the quadriceps muscle, which is the primary source of power in long passing techniques. These two exercises complement each other in developing leg muscle strength, power, and endurance, ultimately contributing to kick quality and game effectiveness. These findings reinforce the importance of incorporating a variety of strength training exercises into soccer athlete development programs, allowing coaches to design more targeted training programs tailored to the needs of players' performance on the field.

It is hoped that the results of this study will not only benefit coaches and athletes at Football School Citra Pratama but also be adapted by other football schools in Indonesia. Given the importance of long-term development of young athletes, the findings of this study can serve as a reference in determining physical training priorities that directly impact technical game skills.

Thus, this research not only addresses technical issues in the field but also fills a gap in the literature regarding the specific relationship between weight-based training methods and long passing ability in adolescent football athletes. The

findings are expected to provide a scientific basis for the development of effective and applicable training models in various sports development contexts.

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