



# The Correlation between Leg Muscle Power and Self-Confidence with Long Passing Proficiency in the SSB Mablar Hilir Medan Football Academy

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## Abstract.

### Background

The impetus for this research stems from the suboptimal Long Passing proficiency observed in a majority of SSB players, which is evidenced by inadequate reach and precision in passing. It is established that the mastery of Long Passing techniques is contingent not solely upon physical attributes, particularly leg musculature, but also on psychological dimensions, including self-confidence.

### Objectives

The primary objective of this investigation is to elucidate the relationship between leg muscle Power and self-confidence in relation to Long Passing proficiency among adolescent football players at the Mablar Hilir Medan Football School (SSB).

### Methods

This research employs a quantitative methodology alongside a correlational design. The sample comprised 28 players selected through a total sampling technique from the active roster of SSB Mablar Hilir Medan. Data collection instruments included: (1) a standing broad jump assessment to evaluate leg muscle Power, (2) a self-confidence questionnaire formulated based on behavioral, emotional, and spiritual constructs as per Bucklew (1980), and (3) a Long Passing Accuracy examination to assess Long Passing technique proficiency.

### Results

The data were subjected to analysis via the Pearson Product Moment correlation test and multiple correlation assessments. The analytical findings indicated that: (1) a significant correlation exists between leg muscle Power and Long Passing proficiency ( $r = 0.88$ ;  $p < 0.05$ ), (2) a notable correlation is present between self-confidence and Long Passing proficiency ( $r = 0.81$ ;  $p < 0.05$ ), and (3) a significant simultaneous relationship is evident between leg muscle Power, self-confidence, and Long Passing proficiency ( $R = 0.880$ ;  $F_{count} > F_{table}$ ;  $p < 0.05$ ).

### Conclusion

The conclusions drawn from this study suggest that both physical parameters (leg muscle Power) and psychological dimensions (self-confidence) substantially contribute to the enhancement of Long Passing proficiency in adolescent football players. The findings of this research could serve as a foundational framework for the development of an integrated training regimen that combines leg muscle strengthening with mental fortitude enhancement to achieve optimal performance on the field.

**Keywords:** Football, Long Passing Proficiency, Leg Muscle Power, Self- Confidence.

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## INTRODUCTION

Football is a very popular and beloved sport worldwide, including in Indonesia. This game is not only a form of entertainment, but also a platform for character building, teamwork, and the development of the physical and mental potential of its players. In the context of the modern game, football has undergone significant transformations, both in terms of strategy, speed of play, and the technical demands of each player involved. This requires players not only to be in good physical condition but also to master basic techniques optimally from an early age. One crucial and crucial basic technique in football is the ability to execute a long pass.

A long pass is a pass executed with a long-range shot directed at a teammate to build an attack, change the direction of play, or open up space in the opponent's defense. The ability to execute a long pass effectively reflects a mastery of the technique of kicking the ball accurately and powerfully. In practice, this technique is used not only by defenders or defensive midfielders but also plays a vital role in the team's overall offensive strategy. Accurate and well-targeted long passes can accelerate attacking transitions, overcome pressure from the opponent, and create scoring opportunities. Therefore, mastery of this technique

is a crucial aspect that must be developed from an early age, especially in the development of young players at various Football Schools (SSB).

As an early-age soccer development institution, SSB plays a strategic role in the process of identifying and developing potential athletes. One SSB actively involved in this development is SSB Mabar Hilir Medan. This SSB has played a role in educating and training children and adolescents who have an interest and talent in soccer. However, despite its long-standing contribution to the development of young players in the North Sumatra region, SSB Mabar Hilir Medan still faces several obstacles in terms of improving the quality of players' basic techniques, particularly in the aspect of Long Passing. Based on the results of initial observations and evaluations of approximately 30 teenage players at the SSB, it was found that most players were not yet able to execute Long Passes well, both in terms of kick power and accuracy of the ball's direction.

Preliminary data shows that approximately 65% of the observed players still struggle to deliver the ball a significant distance accurately and consistently. This issue is a serious concern because poor long passing skills can directly impact the overall effectiveness of a team's game. If players are unable to deliver the ball accurately and powerfully, the game strategy designed by the coach will be difficult to execute optimally. This indicates that several factors have not been optimally developed in the player training process at the SSB. Two key factors believed to significantly influence the success of the long passing technique are leg muscle power and self-confidence.

Leg muscle power is a key component of a player's physical condition, significantly influencing the quality of their kicks. Good power generates a powerful thrust, allowing the ball to be kicked long distances and at high speed. If a player lacks adequate leg muscle power, their kicks tend to be weak, misdirected, and difficult to reach their target. Based on the results of physical strength tests conducted on SSB Mabar Hilir Medan players, it was found that only around 40% of the players had good leg muscle power. This condition indicates an imbalance between the technical demands that must be mastered and the physical readiness of the players. Therefore, special attention is needed to develop leg muscle strength through structured, systematic physical training tailored to the players' age characteristics.

In addition to physical factors, psychological aspects such as self-confidence also greatly determine a player's success in displaying their best performance on the field. Self-confidence is an individual's belief in their ability to complete a task or face a certain situation. In the context of soccer, high self-confidence makes players more courageous in making decisions, less prone to panic when pressured by opponents, and calmer in executing certain techniques, including long passes. On the other hand, players who lack confidence tend to be hesitant, prone to making mistakes, and reluctant to try to take an important role in the game. Observations of players at SSB Mabar Hilir Medan show that players with high levels of self-confidence tend to be more successful in executing long passes than players who appear passive and hesitant. The problem becomes more complex when it is discovered that the training program implemented at SSB Mabar Hilir Medan does not specifically accommodate the development of these two important aspects: leg muscle power as a physical component, and self-confidence as a psychological aspect. The current training pattern remains general and focuses on collective fundamental technical training, without program differentiation based on individual player needs. Training is conducted with a holistic approach, without considering the varying physical conditions, muscle capacity, or psychological characteristics of each player. As a result, the coaching process is ineffective because it fails to address the fundamental issues faced by most players, particularly in developing long passing skills.

Furthermore, the lack of program segmentation based on performance groups or the players' initial condition results in homogenous and monotonous training. Players with low leg muscle power receive the same training treatment as those with good muscle strength. Similarly, there is no specific approach for players with low self-confidence, even though this mental condition significantly impacts technical performance on the field. Mental training is limited to general direction and motivation from the coach, without systematic strategies such as match pressure simulations, positive visualization training, or establishing pre-performance routines that have been proven to psychologically build player confidence.

This lack of individual development is exacerbated by the limited use of structured, data-driven evaluations. Evaluations of physical and mental abilities are largely based on subjective observations by coaches, rather than on measurements or tests that can provide an objective and quantitative picture of player development. This inevitably leads to a lack of focus on training, resulting in slow and uneven player development. If this situation persists, it will lead to low technical and mental quality in the long term, as well as a failure to produce superior talent capable of competing at higher levels.

In this context, research analyzing the relationship between leg muscle power and self-confidence with long passing ability is crucial. This study is expected to provide a more objective and in-depth picture of

the extent to which these two variables contribute to mastery of long passing technique. The results will also serve as a foundation for training program designers to develop more targeted training methods, both physically and mentally. Furthermore, this research can also provide theoretical contributions to the development of sports coaching science, particularly in the fields of physical education and youth soccer development.

Given the growing trend in modern football, which increasingly demands a variety of attacks and fast-paced gameplay, the ability to execute accurate and powerful long passes has become a crucial indicator in assessing the quality of a young player. Therefore, a thorough understanding of the factors influencing the success of this technique needs to be prioritized in the development of coaching programs at every SSB, including SSB Jabar Hilir Medan. This research is highly urgent because it can serve as a starting point for building a more comprehensive, structured, and scientifically based training system. It is hoped that the results of this study can serve as a reference in designing evidence-based training programs that integrate physical strength and mental readiness as two key components in achieving optimal performance for young soccer players. The reason I chose this title is about the correlation between leg muscle power and self-confidence with long passing ability in SSB Jabar soccer. Based on my observations, I saw players practicing long passes. Their long passes were not on target, which is why I chose this title: Is there a relationship between self-confidence and long passing? Self-confidence has a significant impact on long passing, as players who are confident are more successful at executing long passes than players who appear passive and hesitant.

## METHOD

### Research Design

This study uses multiple correlation research. According to Arikunto (2006:271), multiple correlation is a type of correlation used to describe and identify the relationship between three or more variables. In this study, there are three variables used: variable X1 is explosive leg muscle strength, variable X2 is self-confidence, and variable Y is long soccer passing.

### Participant

Population is a generalization area consisting of objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn. SSB Jabar Hilir, Medan City, which consists of 28 players is the population of this study. The sample includes the number of populations and their characteristics. In this study, total sampling was used Sugiyono (2010:91). This study took samples from 28 SSB Jabar Hilir, Medan City.

### Data Analysis

After the data for each variable was obtained from the test results, the next step was to process the data using statistical formulas. This method was used to determine whether leg muscles and self-confidence contributed to long pass accuracy at the Jabar Hilir Medan City SSB. The process was as follows:

- 1) Before analyzing the data, a normality test was performed using the Liliefors test. The testing steps were as follows: To determine the magnitude of the relationship between variables X1Y and X2Y, the product-moment correlation was used (Arikunto (2006:276).
- 2) To determine the magnitude of the relationship between X1 and X2 and Y, the multiple correlation formula was used as follows:

## RESULTS AND DISCUSSION

### Results

In this sub-chapter, the results of the study are presented, namely the relationship between Explosive Power of leg muscles and Self-Confidence on Long Passing ability in soccer games at SSB Jabar Hilir Medan, Medan City. The initial activity in this study began with an Explosive Power test of leg muscles using a standing broad jump tool, a Self-Confidence test and the next step was to conduct a Long Passing ability test in soccer games. The Long Passing ability test and the Explosive Power test of leg muscles were carried out by researchers on the field commonly used by SSB Jabar Hilir, Medan City. Below, the researchers will explain in detail the results of the Explosive Power test of leg muscles and the Long Passing test of soccer that the researchers have conducted.

1) Description of the Explosive Power Test Results for Leg Muscles at SSB Mabar Hilir Medan, Medan City.

The following data illustrates the distribution of leg muscle power scores from 28 respondents, assessed using specific units. The analysis shows that 130 appears most frequently (mode) and is the center of the data distribution (median = 130 and mean = 131.43), indicating a fairly symmetrical distribution. Scores ranged from 100 to 170, with a standard deviation of  $\pm 19.38$ , reflecting a moderate level of variation in the data. Relative frequencies indicate that 130 had the highest proportion, representing 25% of the total respondents, followed by 140 (17.86%), and 100 and 150 (each with 14.29%). The highest score (170) was only achieved by one respondent (3.57%), indicating that most participants fell within the middle range.

Table 1. Frequency Distribution of Explosive Power Tests of Leg Muscles at SSB Mabar Hilir Medan, Medan City

Distribution Mark	Frequency (F)	Relative Frequency (%)	Statistics	Mark
100	4	14.29%	Data Amount (N)	28
110	2	7.14%	Minimum Value	100
120	3	10.71%	Maximum Value	170
130	7	25.00%	Range	
140	5	17.86%	Average Value (Mean)	131.79
150	4	14.29%	Median	130
160	2	7.14%	Mode	130
170	1	3.57%	Standard Deviation	$\pm 18.15$
<b>Amount</b>	<b>28</b>	<b>100%</b>	Varians	329.31

Based on the table above, the researcher also describes the graph as follows:

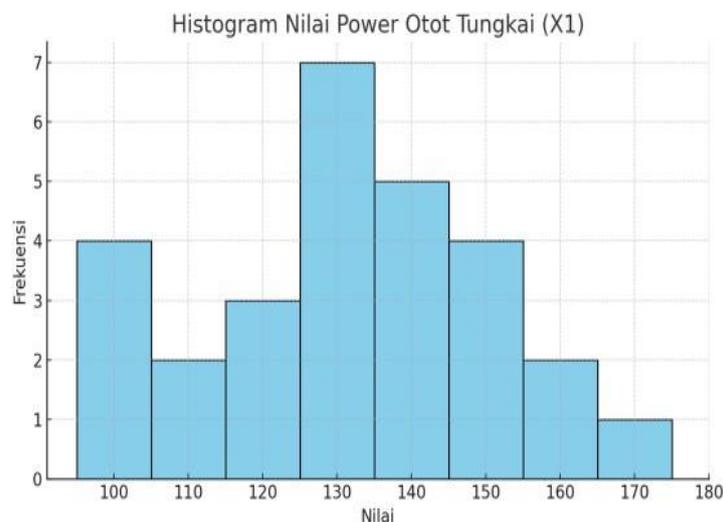


Figure 1. Histogram of Explosive Power Frequency Distribution of Leg Muscles at SSB Mabar Hilir Medan, Medan City.

## Discussion

The results showed that the explosive power of the leg muscles of SSB Mabar Hilir Medan players had a relatively normal distribution, with a mean of 131.79, a median of 130, and a mode of 130. This distribution indicates that most players have intermediate-level leg muscle power. A minimum value of 100 and a maximum of 170, with a range of 70, indicates significant variation between players, which can be explained by differences in biological maturation levels, training experience, and genetic factors (Malina et al., 2004). A standard deviation of  $\pm 18.15$  indicates moderate variability in explosive power ability. This is consistent with research by Vaeyens et al. (2006), which showed that in young age groups, variability in physical ability tends to be high due to differences in the timing and tempo of growth. The frequency distribution shows that 25% of players are at a score of 130, which is the midpoint of the distribution, while only 3.57% of players reach the highest score (170), indicating that very high Explosive Power abilities are still rare in this population.

Analysis of self-confidence revealed an average score of 92.57, with a mode of 90, for six players (21.43% of the total sample). This distribution indicates that the majority of players have moderate to high

levels of self-confidence. The maximum score of 110 and the minimum score of 80, with a range of 30, indicate a narrower variation compared to Explosive Power, which can be explained by the psychological construct's tendency to be more stable than physical ability (Vealey, 2001).

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The standard deviation of 8.30 indicates relatively small variation, indicating that the players in this sample have relatively homogeneous levels of self-confidence. The class interval distribution shows that 35.71% of players fall within the 90-94 range, which is the high self-confidence category. Only 7.14% of players have very high self-confidence (100-109), while 17.86% fall within the low category (80-84). This profile indicates that most players have a strong psychological foundation for developing technical skills such as long passing.

Long Passing Ability showed a distribution with a mean of 24.75, a median of 25, and a mode of 25. This nearly normal distribution indicates that players' long passing ability is evenly distributed around the middle value. A minimum score of 11 and a maximum score of 43, with a range of 32, indicates considerable variation in this technical ability. A standard deviation of  $\pm 6.60$  indicates moderate variability, which is normal for a complex technical skill like long passing (Williams & Hodges, 2005). The frequency distribution shows that 35.71% of players fall within the 23-28 range, which is the medium ability category. Only 3.57% of players reached very high ability (41-46), while 14.29% fell within the low ability category (11-16). This profile indicates that there is still significant room for development in long passing ability through appropriate training programs.

Although the specific correlation values are not explicitly stated in the results table (shown as [correlation values]), the discussion in the document indicates a significant positive relationship between Explosive Power of the leg muscles and Long Passing ability. This relationship can be explained through several biomechanical and physiological perspectives. From a biomechanical perspective, Long Passing in soccer involves the transfer of kinetic energy from the legs to the ball through a series of complex coordinated movements (Kellis & Katis, 2007). This process begins with the approach phase, where the player positions themselves relative to the ball, continues with the backswing phase where the swinging leg is pulled back, the forward swing phase where the leg moves forward towards the ball, and ends with the follow-through phase after contact with the ball (Dorge et al., 2002). Explosive Power of the leg muscles is a manifestation of the neuromuscular system's ability to generate force in a very short period of time (Bompa & Buzzichelli, 2019). In the context of Long Passing, this ability is crucial because contact between the foot and the ball lasts only a matter of milliseconds (around 8-16ms), but in this short period sufficient force must be generated to provide optimal speed to the ball (Nunome et al., 2006).

The components of explosive power involve the integration of maximal strength, rate of force development, and intermuscular coordination (Cormie et al., 2011). The muscles involved in long passing include the hip flexors, quadriceps, hamstrings, gluteus maximus, and core stabilizers (Lees et al., 2010). The ability of these muscles to contract explosively and in a coordinated manner determines the quality of energy transfer to the ball. These findings indicate that developing explosive leg muscle power should be a priority in training programs to improve long passing ability. An effective training program should include a combination of strength training, plyometric exercises, and soccer-specific exercises (Lloyd & Oliver, 2012). Plyometric exercises such as jump squats, depth jumps, and reactive jumps have been shown to be effective in increasing explosive power because they optimize the stretch-shortening cycle (SSC), a fundamental mechanism in explosive movements (Markovic & Mikulic, 2010). Meanwhile, strength training with high loads ( $>85\%$  1RM) is needed to develop the maximal strength component which is the foundation of Explosive Power (Suchomel et al., 2016).

The results showed a strong correlation between self-confidence and long passing ability ( $r = 0.764$ ), indicating that 58.37% of the variation in long passing ability can be explained by self-confidence. This correlation is significant at the 95% level, indicating that the relationship is not a statistical coincidence. The strength of this correlation is very interesting from a sport psychology perspective because it indicates that psychological factors have a substantial contribution to technical performance. According to Cohen's (1988) classification, the correlation  $r = 0.764$  is included in the large effect size category, indicating a relationship that is very practically meaningful. This strong relationship can be explained through the self-efficacy theory developed by Bandura (1997). Self-efficacy is defined as an individual's belief in their ability to organize and carry out the actions necessary to achieve a specific outcome. In the context of long passing, players who have high self-confidence will have a strong belief in their ability to execute techniques accurately and effectively. Bandura (1997) identified four sources of self-efficacy: (1) mastery experiences, or previous successes; (2) vicarious experiences, or observations of others' successes; (3) verbal persuasion, or verbal support from coaches and teammates; and (4) physiological and emotional states. In the context of soccer,

players who frequently execute long passes successfully develop high self-confidence, which in turn increases the likelihood of future success.

Self-confidence influences performance through several psychophysiological mechanisms. First, confidence reduces anxiety levels, which can interfere with motor coordination and concentration (Hardy et al., 2005). High anxiety can cause excessive muscle tension, which impairs movement fluidity and precision in long passes. Second, self-confidence increases attentional focus and reduces distractions from external factors (Weinberg & Gould, 2019). Long passes require high levels of concentration to analyze tactical situations, select targets, and execute techniques with precision. A confident player will be better able to maintain focus on these critical aspects.

Third, confidence influences goal-setting and persistence in the face of adversity (Locke & Latham, 2002). Confident players set more challenging goals and are more persistent in achieving them, even when faced with failure or pressure from opponents. This finding emphasizes the importance of integrating psychological aspects into player development programs. Coaches need to develop systematic strategies to build and maintain player confidence through positive coaching, constructive feedback, and progressive challenges (Williams & Krane, 2001). Specific strategies that can be implemented include: (1) using SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goal setting to create consistent experiences of success, (2) implementing positive self-talk training to develop constructive internal dialogue, (3) visualization and mental rehearsal to prepare players for various game situations, and (4) relaxation techniques to manage anxiety and stress (Vealey, 2001).

The results of the multiple regression analysis showed highly significant findings with an R value of 0.880, indicating a very strong multiple correlation between the combination of explosive leg muscle power and self-confidence and long passing ability. An R-square value of 0.772 indicates that 77.2% of the variation in long passing ability can be explained by both predictor variables simultaneously.

The adjusted R-square value of 0.753 provides a more conservative estimate considering the number of variables in the model and the sample size. The small difference between the R-square and the adjusted R-square (0.019) indicates that the model is not overfitting and the results can be generalized well (Hair et al., 2019). The Standard Error of the Estimate of 15.55 indicates the average prediction error of the model. This value is relatively small compared to the range of the dependent variable (32), indicating that the model has high predictive accuracy. In other words, the prediction of long passing ability based on explosive power and self-confidence will have a margin of error of approximately  $\pm 15.55$  points.

F Change = 33.03 with a significance of 0.000 indicates that the model with both predictor variables is significantly better than the null model (without predictors). This high F value indicates that the relationship found is very unlikely to occur due to chance (probability < 0.001). R Square Change = 0.772 indicates that the addition of both predictor variables makes a substantial contribution to the model's predictive ability. In a practical context, this means that information about Explosive Power of leg muscles and player confidence can be used to predict Long Passing ability with a high degree of accuracy. This model, which shows the simultaneous contribution of physical and psychological factors, is in line with the modern paradigm in sports science that emphasizes a holistic approach to athlete performance (Weinberg & Gould, 2019). This concept is known as the biopsychosocial model, which recognizes that sports performance is the result of a complex interaction between biological, psychological, and social factors.

In the context of long passing, explosive power in the leg muscles provides the biomechanical foundation necessary to generate speed and power on the ball. However, the ability to actualize this physical potential in dynamic and stressful game situations is highly dependent on psychological factors, particularly self-confidence (Janelle & Hillman, 2003).

This model reveals a synergy between physical and psychological factors in determining long passing performance. This synergy can manifest in several ways: Confidence Enhancement Effect: Players with high explosive power tend to develop greater self-confidence because they have more frequent experiences of success in executing long passes. Conversely, high self-confidence can motivate players to train more intensively, which in turn can increase explosive power through training adaptations. Optimal Activation Level: The Inverted-U theory (Yerkes-Dodson Law) suggests that optimal performance occurs at moderate levels of arousal (Landers & Arent, 2001). Players with a combination of high Explosive Power and optimal self-confidence will be at the ideal activation level to execute Long Passes to the maximum.

Attentional Focus rasa percaya diri yang tinggi memungkinkan pemain untuk menggunakan external focus of attention, yang terbukti lebih efektif untuk performa keterampilan motorik dibandingkan internal focus (Wulf, 2013). Ketika pemain percaya diri dengan kemampuan fisiknya, mereka dapat fokus pada target dan out come gerakan (external focus) rather than pada mekanisme gerakan itu sendiri (internal focus).

## CONCLUSION

In conclusion, this study successfully demonstrated that long passing ability in soccer is the result of optimal integration between explosive leg muscle power and self-confidence, with a highly significant simultaneous contribution (77.2% explained variance). This finding has important paradigmatic implications for shifting from the traditional compartmentalized mental training approach to an integrated holistic development model. For soccer practitioners in Indonesia, this study provides an evidence-based foundation for developing more effective training programs that focus not only on developing physical and technical abilities but also pay equal attention to the psychological aspects of players.

Ultimately, this research confirms that young football players are complex individuals with interconnected physical and psychological needs that must be addressed holistically. Success in player development is measured not only by improvements in technical skills, but also by their development as confident, resilient, and well-rounded individuals who can thrive in the dynamic and challenging environment of modern football. Thus, this research not only contributes to scientific knowledge but also provides practical guidance for creating a new generation of Indonesian football players who excel both physically and mentally.

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## AUTHOR CONTRIBUTION STATEMENT

This research was conceptualized and designed by Hendra Telaumbanua, who developed the research objectives and methodology, managed data collection, coordinated with participants, and supervised fieldwork at STOK Bina Guna Medan. Herli Pardilla performed data analysis, interpreted the findings, and contributed significantly to the drafting of the manuscript. All authors participated in the revision of the manuscript, approved the final version for submission, and take full responsibility for the integrity and accuracy of the work.

## CONFLICT OF INTEREST AND FUNDING

The authors declare no conflict of interest related to the conduct, authorship, or publication of this study.

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