

# The Effectiveness of Power of Leg Muscles and Flexibility of Leg Muscles to Improve Lofted Kick Method

**Budiharjo<sup>1</sup>, Totok Sumaryanto Florentinus<sup>2</sup>, Sugiharto<sup>3</sup>, Soegiyanto K. S<sup>3</sup>.**

<sup>1234</sup>Graduate School, Universitas Negeri Semarang  
Kelud Utara III Gajahmungkur, Semarang 50228  
Corresponding email : [budiharjo2009@yahoo.co.id](mailto:budiharjo2009@yahoo.co.id)

## Abstract

The purposes of this research are to know: (1) the significant different methods between lofted kick method (ball is passed from the front), and lofted kick method (ball is passed from the back); (2) the different effects between upper flexibility of leg muscles and flexibility of lower leg muscles; (3) the interaction between lofted kick method and power of leg muscles; (4) the interaction between lofted kick method and flexibility of leg muscles; (5) the interaction between power of leg muscles and flexibility of leg muscles; and (6) the interaction among lofted kick method, power of leg muscles, with flexibility of leg muscles. The research design used a 2x2x2 experiment factorial design. Population that had been used in this research was all students of Salatiga Training Center (SCT) that had been chosen by using a total sampling method. The data were analyzed by Analysis of Variance (ANOVA) with level of significant  $\alpha = 0,05$ . The researcher is able to conclude that there are significant differences before and after the treatment in which had been given to the football player.

**Keywords:** Lofted Kick Method, Power of Leg Muscles, Flexibility of Leg Muscles, Lofted Kick Skills

## 1. Introduction

The Football Association (FA) (2015) as quoted by Griffiths, Probert, and Cropley (2018), "there has been a gradual decline in playing numbers during the last decade". Most people believe that football is not currently best job to earn money, for instance in Indonesia, many professional football players did not earn enough money from clubs.

In contrast, soccer is still one of the most popular sport games for Indonesian, both in cities and in villages, ranging from children, teenagers, adults and parents. Chan, et al (2016, p. 1), "football is the most popular sport in the world with 260 million football players in the world". Bangsbo (2006) as quoted by Stoica and Blejan (2012, p. 2136) notes that "any person attending a game, can see how football is a sport that requires considerable physical effort". In addition, Sener and Karapolatgil (2015, p. 10), "professional football has developed into a huge industry, becoming a business more than entertainment". Gao and Dong (2014, p. 988) say that football has an important effect on global economy and culture that propels it become a kind of sports event mad loved by global people. Rattanapian, Tingsabhat, and Kanungsukkasem (2017, p. 2), "the football team will sign a contract with players and the football clubs pay compensation in order to support their livings as truly professional football players". Therefore, not only is football

popular as a physical sport, but also it gives many advantages in the worldwide economy.

Khodajo, Nikseresht, and Khoshnan (2014, p. 448), "In a football, needs several such shot, jumping, tackling, sprinting and changing pace frequent changes of location shooting". In instance, Izovska, Maly, and Zahalka (2016, p. 459), "Kicking is one of the most fundamental ball-based soccer skills". Lennox, Rayfield, and Steffen (2006, p. 54), "From all of techniques in the game, shooting is far which is the favorite and most practiced". Kicking the ball can be done in a state of the ball stilling, rolling, or floating in the air (Sanggantara, 2012, p. 2). Therefore, the ability to kick ball is important for all players because they have diverse functions.

In addition, one of kicking method is lofted kick. Lofted kick is greatly influenced by choosing the right method of lofted kick (Mahbubi and Adi, 2016, p. 77). The lofted kick is used one of them to make a quick counterattack by accurately kicking the ball away in front of the attacking player to create a goal. Wibowo (2013, p. 10) says that "the defender uses long-pass kicks to provide feedback". Hadi and Ali (2012, p. 228), "the physical condition of the soccer players is one of the crucial foundations, which determine the efficiency of the skill and tactical performance, as any plan, whatever its selection accuracy, can fail if physical abilities are not taken into consideration". A good and maximum lofted

kick can produce a long ball kick, and it must support with physical ability.

In addition, Wong et al., (2010, p. 653) Numerous explosive activities are required in soccer, such as jumping, kicking, tackling, turning, sprinting, and changing pace. One method of training to lofted kick is the explosive power of the leg muscles. Taheri, Nikseresht, and Khoshnam (2014, p. 383), "explosive power is also an important factor in leg muscles of professional football players". According to Pasurney in Nasution (2008, p. 5) said that "explosive power is energy that can be used to move weight or load in a certain time". Islam (2017, p. 2529) says that explosive power is the rate of force development is at the maximum for any type of muscle action is explosive power. Lofted kick is greatly influenced by the explosive power of the leg muscles (Hasbi, Mentara, and Hasanuddin 2015: 2). According to Akbar (2017, p. 70), "The accuracy of shooting to the goal has not been maximized by several factors including: lack of waistline, lack of explosive leg muscle power". Syafrudin (1992) in Ilham (2014, p. 54) says that "Power is the ability of the muscles to overcome pressure with high contraction speeds". Satria and Desandra (2016, p. 6), "In order to the kick to be far away, maximum leg muscle power is needed, therefore, it is necessary to train leg muscle power". Then training of power in leg muscle is very important to increase the distance from the lofted kick and can be accompanied by a foot position.

The method of lofted kick, the leg muscle explosive power is still not enough to equip football players, therefore, the players must also have other physical abilities to kick the lofted ball that is muscle flexibility. Pandey and Chaubey (2015, p. 303) say that flexibility is the ability of possessing full range of motion around joints in the body. According to Ismaryati (2008, p. 101), there are two types of definitions, namely the dynamic (active) and static (passive).

## 2. Methods

For the purposes of analyzing data, this design is described in factorial form, where each factor is included in the amount or number of subjects who would obtain research conditions. With the existence of three variables that have two factors, it is called the 2x2x2 factorial design. The population was students of the training football center in Indonesia, while the

affordable population was students of football club of Salatiga Training Center (STC). The sample used in this research was all students of Salatiga Training Center (STC) as many as 32 students who were drawn from the affordable population. The sampling technique used in this research is total sampling technique which is all members of the affordable population made as members of the sample. The instruments used in this research are: (1) Upright jump test, this test is used to measure the explosive power of leg muscles. (2) Flexibility of leg muscles tests, this test is used to measure the flexibility of leg muscles. (3) The longest shoot test is from warner, this test is used to measure the ability to kick the ball. After analyzing the data stated normal and homogeneous, then continued with parametric analysis with statistical analysis of variance (ANOVA) statistics at a significance level of  $\alpha = 0.05$ .

## 3. Result and Discussion

The finding and discussion aim to see in general the description of the character of the ability on lofted kick of students who become the sample or subject in this research. Scores or data on the results of lofted kick that the treatment group are explained as follows.

**Table 1.** Description Data of Lofted Kick Result

Power of Leg Muscles	Flexibility of Leg Muscles	Method of Practice		Total
		A1	A2	
B1	C1	M = 11.98 Sd = 1.23 N = 4	M = 3.13 Sd = 1.11 N = 4	M = 7.55 Sd = 4.85 N = 8
	C2	M = 3.57 Sd = 0.56 N = 4	M = 3.66 Sd = 4.26 N = 4	M = 3.62 Sd = 2.81 N = 8
B2	C1	M = 3.13 Sd = 1.11 N = 4	M = 2.16 Sd = 0.85 N = 4	M = 2.64 Sd = 3.82 N = 8
	C2	M = 3.66 Sd = 4.26 N = 4	M = 1.30 Sd = 2.09 N = 4	M = 2.48 Sd = 3.50 N = 8
Total		M = 8.97 Sd = 4.34 N = 16	M = 7.98 Sd = 2.40 N = 16	M = 8.47 Sd = 3.82 N = 32

Explanation:

N = the amount of sample

Sd = standard deviation

M = mean

A1 = Lofted Kick (bola is passed from back)

A2 = Lofted Kick (bola is passed from front)

B1= Upper explosive of leg muscles

B2 = Lower explosive of leg muscles

C1 = Upper flexibility of leg muscles

C2 = Lower flexibility of leg muscles

Normality test from phenomena which is researched by using Lilliefors test.

**Table 2.** Normality Data Result of Research

Group	L <sub>test</sub>	L <sub>table</sub> (a=0,05;db=9)	Conclusion
1	0.157	0.381	Normal
2	0.196	0.381	Normal
3	0.187	0.381	Normal
4	0.272	0.381	Normal
5	0.187	0.381	Normal
6	0.272	0.381	Normal
7	0.232	0.381	Normal
8	0.186	0.81	Normal

Based on the table above shows that the L test is smaller than the L table at a significance level of  $\alpha = 0.05$  for all research groups, so it can be said that all research groups have data that is normally distributed data fulfilled for further testing purposes with parametric statistics.

**Table 3.** Result Test of Homogeneous Variance

Group	$\chi^2_{test}$	$\chi^2_{table}$ (a=0.05;db=3)	Conclusion
1			
3			
4			
5	12.934	14.07	Homogeny
6			
7			
8			

From the test results, it can be seen that  $\chi^2_{test} = 12.934$  is smaller than  $\chi^2_{table} = 14.07$  at the significance level  $\alpha = 0.05$  so that it can be concluded that the eight data groups tested are from a population with homogeneous variance. Before testing the hypotheses that have been proposed in this research, analysis of variance (ANOVA) is done first with the help of SPSS 10.0 program. The calculation results obtained can be summarized in the following table.

**Table 4.** Summarize of Analysis Varian Tests of Between-Subject Effects

Tests of Between-Subjects Effects						
Dependent Variable: Shooting Ability						
Source	Type III Sum of Squares	Df	Mean Square	F <sub>hitung</sub>	F <sub>Table</sub>	Sig.
Corrected Model	314.662 <sup>a</sup>	7	44.952	8.929		0.000
Intercept	486.876	1	486.876	96.709		0.000
Method	57.299	1	57.299	11.381		0.003
Explosive Power	90.519	1	90.519	17.980		0.000
Flexibility	41.360	1	41.360	8.215		0.009
Method * Explosive Power	23.154	1	23.154	4.599	4,250	0.042
Method * Flexibility	35.744	1	35.744	7.100		0.014
Explosive Power * Flexibility	22.078	1	22.078	4.385		0.047
Method * Explosive Power * Flexibility	44.510	1	44.510	8.841		0.007
Error	120.827	24	5.034			
Total	922.365	32				
Corrected Total	435.489	31				

a. R Squared = .723 (Adjusted R Squared = .642)

The calculation of the data analysis results in this research has been carried out using analysis of variance test against the hypotheses that have been proposed, but it turns out that the six hypotheses are accepted. Looking at the

results of hypothesis testing, each of the results can be described as follows:

First, the researcher can conclude that there is a significant difference between lofted kick (the ball is passed from back) and the method of lofted kick (the ball is passed from the front) on the ability on lofted kick at the STC based on  $F \text{ test} = 11.381 > F \text{ table value} = 4.25$  at the signification level  $\alpha = 0.05$ .

Second, researchers can conclude that there is a significant difference between upper leg muscle flexibility and lower leg muscle flexibility on lofted kick in STC based on  $F \text{ test} = 8.215 > F \text{ table} = 4.25$  at the signification level  $\alpha = 0.05$ .

Third, the researchers can conclude that there is an interaction between lofted kick and the explosive power of the leg muscles on lofted kick in STC based on  $F \text{ test} = 4.599 > F \text{ table} = 4.25$  at the significance level  $\alpha = 0.05$ .

Fourth, the researcher can conclude there is an interaction between the method of lofted kick and the flexibility of the leg muscles on lofted kick at STC based on  $F \text{ test} = 7.100 > F \text{ table} = 4.25$  at the significance level  $\alpha = 0.05$ .

Fifth, the researcher can conclude that there is an interaction between the explosive power of leg muscle and flexibility of leg muscles on the ability on lofted kick in STC based on  $F \text{ test} = 4.385 > F \text{ table} = 4.25$  at the significance level  $\alpha = 0.05$ .

Sixth, the researcher can conclude that there is an interaction among lofted kick, the explosive power of the leg muscles and the flexibility of the leg muscles to the ability on lofted kick in STC based on  $F \text{ test} = 8.841 > F \text{ table} = 4.25$  at the significance level  $\alpha = 0.05$ . Therefore, it is necessary to pay attention to aspects of physical ability in this case the explosive power of the leg muscles and flexibility of the leg muscles in the exercise process.

#### 4. Conclusion

From the results of data analysis and discussion in this research, researcher is able to conclude that, as follows: There is a significant difference between the method of lofted kick ball (the ball is passed from back) with the method of lofted kick (the ball is passed from front) of the ability on lofted kick. There is a significant difference in the effect between upper leg muscle flexibility and lower leg muscle flexibility on lofted kick. There is an interaction between the method on lofted kick

with the explosive power of the leg muscles to the ability on lofted kick. There is an interaction between the method of lofted kick and the flexibility of the leg muscles to the ability on lofted kick. There is an interaction between the explosive power of the leg muscles and the flexibility of the leg muscles on lofted kick. There is an interaction among the method of training on lofted kick, the explosive power of the leg muscles and the flexibility of the leg muscles on lofted kick.

#### 5. References

- Akhbar, M. T. 2017. "Kontribusi Kelentukan Pinggang dan Explosive Power Otot Tungkai Terhadap Akurasi Shooting Atlet Sepak Bola SMA N 3 Bengkulu Selatan". *Jurnal Pendidikan Rokania*. Volume II No. 1 Hal. 66-78.
- Chan, K., Fong, P., Lee, Y., Yau, C., Yung, H., & Chan, M. Power and endurance in Hong Kong professional football players. *H.C.-K. Chan et al. / Asia-Pacific Journal of Sports Medicine, Arthroscopy, Rehabilitation and Technology* 5, 1-5.
- Gao, B., & Dong, J. (2014). Football best shooting area and goal ration correlation research based on multivariate statistical model. *J. Chem. Pharm. Res.*, 6(3), 988 – 993.
- Griffiths, R., Probert, J., & Cropley, B. (2018). The flipped university: exploring student progression in football coaching and development. *University of Sussex Library*.
- Hadi, A., & Ali, A. A. (2012). Effect of the Development of Explosive Power, Shooting Accuracy and Flexible Thighs Joint, Spine on Penalty Kick Accuracy for the Students Majoring in Soccer in Faculty of Physical Education. *World J. Sport Sci*, 6 (3), 228-236.
- Hasbi, Muhammad., Mentara, Hendrik., dan Hasanuddin. 2015. "Pengaruh Latihan Kekuatan Otot Tungkai terhadap Jauhnya Tendangan dalam Permainan Sepakbola pada Klub PS Puma Pombalowo Kecamatan Parigi". *Jurnal Ilmiah Olahraga*. Volume 3 No. 11 Hal. 1-12.
- Ilham. 2014. "Hubungan Power Tungkai, Kecemasan Terhadap Ketepatan Tendangan Peserta Ekstrakurikuler Sepakbola Smp Negeri

- 21 Tanjung Jabung Timur”. *Jurnal Penelitian Universitas Jambi Seri Humaniora*. Volume 16 No. 1 Hal. 45-54.
- Ismaryati. 2008. *Tes dan Pengukuran Olahraga*. Surakarta: Lembaga Pengembangan Pendidikan (LPP) UNS dan UTP Penerbit dan Percetakan UNS (UNS press).
- Islam, H. (2017). A Comparative Study between Explosive Power Muscle Girth and Kicking Ability of Football Players. *International Journal of Science and Research*, 6(6).
- Izovska, J., Maly, T., & Zahalka, F. (2016). Relationship between speed and accuracy of instep soccer kick. *Journal of Physical Education and Sport*, 16(2), 459-464.
- Khodajo, A.R., Nikserest, A., & Khoshnam, E. (2014). The effect of strength and plyometric training on anaerobic power, explosive power and strength quadriceps femoris muscle in soccer players. *Euro. J. Exp. Bio*, 4(1), 448-451.
- Lennox, Jim., Rayfield, Janet., dan Steffen, Bill. 2006. *Soccer Skills and Drills National Soccer Coaches Association of America*. United States: Human Kinetics.
- Mahbubi, Rizal., dan Adi, Spto. 2016. “Pengembangan Model Latihan Long Pass Control dalam Permainan Sepakbola untuk Siswa Usia 14-16 Tahun di Sekolah Sepakbola Mitra Jaya Soccer Kota Magelang”. *Jurnal Kepelatihan Olahraga*. Volume 1 No. 1 Hal. 75-89.
- Nasution, M. 2008. *Penyusunan Program Latihan Kekuatan dan Daya Ledak*. Semarang : Unnes.
- Pandey, A. K., Chaubey, D.K. (2015). Relationship between explosive strength and agility of Football male players. *International Journal of Applied Research*, 1(10), 303-305.
- Rattanapian, P., Tingsabhat, J., & Kanungsukkasem, V. (2017). Factors in influencing achievement of Regional League Division 2 football tournament management. *P. Rattanapian et al. / Kasetsart Journal of Social Sciences xxx*, 1-8.
- Sanggantara, Yusuf. 2012. “Pengaruh Latihan Plyometric terhadap Hasil Tendangan Bola Lambung Jauh Pada Permainan Sepakbola Arkansas FC”. *Jurnal Ilmiah Olahraga*. Hal. 1-8.
- Satria, M. H., dan Desandra, M. 2016. Pengaruh Latihan Power Otot Tungkai Terhadap Peningkatan Tendangan Jarak jauh Sepakbola. *Jurnal Ilmiah Bina Edukasi*. Vol. 9 No. 1 Hal. 11-20.
- Sener, I., & Karapolatgi, A. A. (2015). Rules of the Game: Strategy in Football Industry. *İrge Şener and Ahmet Anıl Karapolatgil / Procedia - Social and Behavioral Sciences 207*, 10 – 19.
- Stoica, M., & Blejan, C. (2013). Optimizing physical training through adapted specific tests in high performance football. *Marius Stoica and Cornel Blejan / Procedia - Social and Behavioral Sciences 93*, 2136 – 2143.
- Taheri, E., Nikseresht, A., and Khoshnam, E. 2014. The Effect of 8 Weeks of Plyometric and Resistance Training on Agility, Speed and Explosive Power in Soccer Players. *Pelagia Research Library*. 4 (1) 383-386.
- Wibowo, Drajad Hadi. 2013. “Hubungan Daya Ledak Otot Tungkai dan Panjang Tungkai Terhadap Hasil Tendangan Jarak Jauh Pada Pemain Sepakbola Lipio UNNES Tahun 2012”. *Skripsi*. Semarang: Universitas Negeri Semarang.
- Wong, P., Chaduachi, A., Chamahi, K., Dellal, A., & Wesloff, U. (2016). effect of preseason concurrent muscular strength and high –intensity interval training in professional soccer players. *Journal of Strength and Conditioning Research*, 24(3), 653- 660.