

Explosive Power Level of Leg Muscles in Shooting Skills in Futsal Players

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A. Conception and design of the study; **B.** Acquisition of data;
C. Analysis and interpretation of data; **D.** Manuscript preparation; **E.** Obtaining funding

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ABSTRACT

This descriptive correlational study aims to determine the analysis or influence of leg explosive power on shooting skills in futsal players of the Febresquard club. The population of this study was all 15 futsal players of the Febresquard club and examined all members of the population (Total Sampling). Data collection of leg explosive power used the Standing Long Jump test instrument and futsal shooting skill data used a targeted shooting test. The data was analyzed using a simple regression coefficient statistical analysis technique. From the results of the data analysis, it can be concluded as follows: There is a significant relationship/influence of leg explosive power on futsal shooting skills, with a direction coefficient (b) of 0.419 ($p = 0.002$) and a relationship strength of $R = 0.735$ ($p = 0.000$).

Keywords : Explosive Power; Leg Muscles; Shooting; Futsal.

INTRODUCTION

To become a good futsal player, you must first know the basic techniques of playing futsal. Because basic techniques are needed by the players. In general, the basic technique conditions of futsal players are still not good (Anggriawan, 2016). This is following the statement of the coach who said, "The basic techniques of players still need a lot of practice, because many are still in mastering basic techniques such as control, passing, and shooting". This explains that many of the players who take part in futsal training are still not perfect in mastering the basic techniques of playing futsal, such as when controlling the ball, passing to friends, and shooting towards the goal (Wibowo, 2018). Many factors cause this to happen, including the lack of understanding of players in training. The game of futsal continues to experience changes and developments in terms of regulations, technology, and facilities related to the smooth running of a match (Hamzah & Hadiana, 2018).

No less important now are the techniques, tactics and strategies applied by players and coaches in facing a match (Nosa et al., 2019). All of this is intended to make this futsal game more beautiful and interesting (Kusuma, 2019). To become a good futsal player, you must first know the basic techniques in the futsal game, namely the foundation technique

(Mashud et al., 2019) or basic techniques like someone building a house, the stronger the foundation (Ashari & Adi, 2019) the greater the style of variation in the size and shape of the building that can be built so basic skills like that are needed by players (Habibul Rasyd, Ahmad Atiq, 2019).

The role of physical condition in carrying out a sports skill is very important (Afandi & Faisal, 2020). Good physical condition will result in 1) Increased ability of the circulatory system and heart function, 2) Increased strength, endurance, and other physical condition abilities, 3) More economical movement towards training goals, 4) Faster recovery in body organs after training, 5) Fast response from body organisms (Oman Hadiana, 2020). Based on observations made by researchers in the field, the abilities of Febressquad futsal players are still not good. This can be seen from the shooting of most of the players. This may be due to the physical condition of the players which is still lacking (Prasetyo Widiyono & Mudiono, 2021).

Sports are also carried out to achieve a certain level of physical fitness (Festiawan, 2020). In this case, starting from various fields of science that are related to humans such as medical knowledge, social, economic, environmental and others (Solihin, 2020), which are taken into account and considered, carried out formally, both programs, facilities and facilities under the care of professional staff (Setiawan et al., 2021). In this case, the science of sports coaching and development is part of an effort to improve the physical and spiritual health of the entire community, fostering a disciplined character, and sportsmanship (Susilo & Bawono, 2021) and developing sports achievements that can arouse national pride (Novianto & Nugraheningsih, 2021). Apart from that, what is no less important is that sport is an aspect of everyday life so it becomes something that is needed by society, both old and young (Agustan & Hidayat, 2021).

The ability to shoot is not only for forwards, but all players should have the skills to shoot at every opportunity they get (Kuncoro, 2016). The implementation of shooting here is not just about shooting, but the shooting referred to here is the ability to direct the ball into the goal mouth when shooting (Bangkit Gala Persada, 2019). So the direction of the shooting can produce goals as the goal of the futsal game which is almost the same as football (Habibul Rasyd, Ahmad Atiq, 2019). Strength can be interpreted as the ability of a group of muscles to resist the load in one effort. This quote is directly proportional to the implementation of shooting because shooting will be better implemented if accompanied by good strength and shooting direction. In shooting, explosive leg muscle power is needed, because in explosive leg muscle power, there is an element of strength.

METHODS

This research is quantitative, which explains the relationship between variables by analyzing numeric data (numbers), using statistical methods through hypothesis testing. The research method used is the cross-sectional survey method, which is a study to study the dynamics of the correlation between risk factors and effects using an approach, observation, and data collection, at the same time (point time approach). This study focuses more on the relationship between leg muscle endurance and the shooting skills of Febresquad club futsal players. According to Creswell (2014), quantitative correlational research is research using statistical methods that measure the influence between two or more variables.

Population is the entire population intended to be investigated. The population is limited to several residents or individuals who have at least the same characteristics. The

population in this study was the 15 Febresquad club futsal players. The sampling technique in this study with the population of the Febresquad club futsal players who participated in the training totalling 12 people, using total sampling. This means that the sample used is the same as all members in the population or from all the number of Febresquad club futsal players who participated in the futsal training as the subject of the study as a whole (total).

The instruments and devices used in this study include the following: (1) Leg muscle explosive power was measured using the Standing Long Jump test, and (2) Shooting accuracy was measured using the Targeted Goal Test.

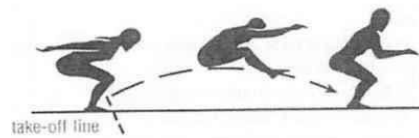


Figure 1.

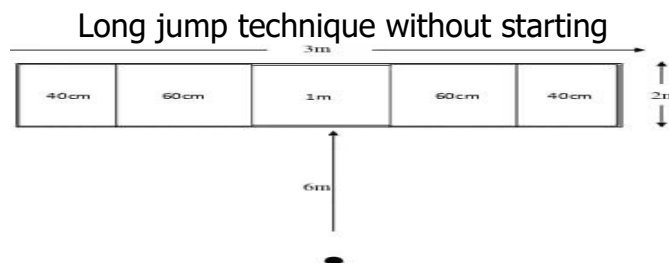


Figure 2.

Diagram of Shooting Test to Futsal Goal

RESULTS AND DISCUSSION

Results

The results of the descriptive data analysis of the research variables can be seen in the summary in Table 1 below.

Table 1.

Results of descriptive analysis of data on leg strength, leg explosive power and shooting skills of futsal players

Statistics	Explosive leg power	Futsal shooting skills
N	15	15
Mean	1,94	28,00
Std. Deviation	0,31	7,75
Variance	0,99	6,10
Range	1,00	25,00
Minimum	1,40	15,00
Maximum	2,40	40,00

The results of the descriptive analysis of the explosive power data of the Febresquad club's legs obtained a description of the state of the data, including, an average value of = 1.94 meters, a variance value of 0.31 meters, a range of 1.00 meters, a standard deviation value of 0.31 meters, a maximum score of = 2.40 meters and a minimum score of 1.40 meters. The results of the descriptive analysis of the shooting skills data of the Febresquad club's futsal players, obtained a description of the state of the data, namely an average value of 28.0 points, a variance value of 6.10 points and a standard deviation of = 7.75 points, a minimum score of = 15.00 points and a maximum score of 40.00 points, range = 25.00 points, total score of = 420.00 points.

Requirements Analysis Testing

The technique of testing the normality of data for each variable in this study is using the Kolmogorov-Smirnov coefficient analysis method (Z). The results of the normality test for all research data can be presented as listed in Table 2 below.

Table 2.

Results of normality test of explosive leg power and shooting skills data

	Explosive leg power	Futsal shooting skills
N	15	15
Kolmogorov-Smirnov Z	0.433	0.840
Asymp. Sig. (2-tailed)	0.992	0.483

For the explosive power data of the legs, the coefficient value of KS-Z = 0.433 was obtained ($P = 0.992 > \alpha 0.05$), thus it can be concluded that the explosive power of the Febresquard club's legs is normally distributed and for the Shooting skills data of the futsal players of the Febresquard club, the coefficient value of KS-Z = 0.840 ($P = 0.483 > \alpha 0.05$), thus it can be concluded that the Shooting skills data of the futsal players follow a normal distribution or are normally distributed.

Next, the homogeneity test is to determine the consistency (homogeneity) of the variance between the three groups of variables in this study. Based on the results of the questionnaire reliability test, Cronbach's Alpha coefficient value was obtained at a significance level of 5%. It was obtained at 1,075 with a Cronbach's Alpha coefficient value of $0.391 > 0.05$, indicating that the variance between groups of variables in this study was considered homogeneous. So that it meets the requirements for the assumption of using parametric statistics to test the hypothesis in this study.

Regression Coefficient Analysis

Regression of leg explosive power on shooting skills of Febresquard club futsal players. To determine the effect of leg explosive power on the shooting skills of Febresquard club futsal players, a simple regression analysis was conducted. The summary of the analysis results can be seen in Table 3, below:

Table 3.

The results of a simple regression analysis of leg explosive power on futsal players' shooting skills

Variable	a	β	P
Leg explosive power *	-5.058	17.034	0.004
Shooting skills of futsal players			

Based on Table 3 above, it can be seen that the coefficient value $\beta = 17.034$ ($P = .004$). This value indicates the contribution of leg explosive power to the futsal player's Shooting skills. Based on the results of the analysis, the constant value (a) is = -5.058, which means that if the value of the leg explosive power variable remains constant, then the futsal player's Shooting skills have a value of 5.058 units. And then, the regression direction coefficient (b) is obtained as = 17.034. Shows the meaning of a directly proportional influence between leg explosive power and a futsal player's shooting skills. This means that every change in one leg's explosive power will be followed by a change in the futsal player's Shooting skill score of 17.034 units at a constant of 5.058. This relationship can be understood through the regression line equation of leg explosive power to futsal player's Shooting skills, namely $\hat{Y} = 5.058 + 17.034 X$.

The results of the calculations for the significance and linearity tests of the regression line equation are summarized in the following table 4:

Table 4.
 Results of the calculation of the significance and linearity test of the regression line
 equation $\hat{Y} = 5.058 + 17.034 X$

Variable		$F_{(Tc)}$	Sig	$\alpha = 5\%$
Futsal player shooting skills *	Deviation from linearity	18.007	0.038	0.05
Leg explosive power				

Based on Table 4 above, it can be seen that the results of the linearity test calculation of the explosive leg power regression (X) on the Shooting skills of futsal players (Y) obtained a value of $F_h (T_c) = 18.007$ with a sig. = $0.038 > 0.05$, then it was decided to accept H_0 , so it can be concluded that the form of the regression line equation $\hat{Y} = 5.058 + 17.034 X$ is linear. At the same time, the significance test of the regression line obtained a value of $F_h = 34.969$ (Sig = $0.00 < 0.05$). So it was decided to reject H_0 , so it can be concluded that the form of the regression line equation $\hat{Y} = 5.058 + 17.034 X$ is significant.

There is a relationship between explosive leg power and the shooting skills of futsal players.

The results of the simple regression calculation obtained a determination coefficient value of $= 0.478$ and the results of the hypothesis testing in the form of a comparison of the significance value of the F ratio calculation result of 11.903 or comparing the significance value obtained of $p = 0.004$ with the significance level value used, namely 5% , it turns out that the significance value obtained is smaller than $\alpha = 0.05$, then it is decided that H_0 is rejected, meaning that there is a significant relationship/influence of leg explosive power on the shooting skills of Febresquard club futsal players of 47.80% . Furthermore, the strength of the relationship between leg explosive power and futsal player shooting skills is $= 0.691$, this value is in the interval $0.60 - 0.799$ (Sugiyono (1999: 216), meaning that the correlation coefficient shows a strong level of relationship.

Discussion

The results of the hypothesis testing of this study show that at a 95% confidence level, leg explosive power has a significant effect on the Shooting skills of futsal players, with a direction coefficient of $b = 5.058$ units of measurement of leg explosive power and a coefficient of determination of 0.478 . This means that leg explosive power has a positive effect of 47.80% on the shooting skills of futsal players. Thus, it can be stated that leg explosive power is one of the physical components that is also needed and helps determine the Shooting skills of futsal players. Given the strong gravitational force on the moving ball that affects the direction of the ball's movement, leg explosive power is needed to deliver the ball quickly to the target.

Performing futsal player shooting movements by mobilizing all the power they have, especially in the legs must be coordinated with leg movements to support ball playing skills by trying to bounce the ball using both legs as much as possible by using explosive skills to see and hit the ball so that they can determine and direct the ball to be shot. Given the existence of a strong gravitational force on the moving ball that affects the direction of the ball's movement, it requires explosive power skills between the legs. So it can be ascertained that the role of leg explosive power also determines the futsal player's Shooting skills. Furthermore, this is in line with the opinion of Mochamad Sajoto (1988:58) that: explosive power is a person's skill in controlling their nerve organs and muscles while performing

movements that require good explosive power, in this case, the movement of kicking the ball (sooting the ball).

Thus it is reasonable to conclude that leg explosive power has a significant influence on the shooting skills of futsal players. In other words, if leg explosive power is improved properly and applied to the shooting movement patterns of futsal players, it will also clearly realize the level of futsal players' shooting skills is getting better and developing.

CONCLUSION

The results of the literature review presented previously and the framework of thought along with the results of the data analysis produced, then several research conclusions can be drawn, namely: There is a significant and linear influence of leg explosive power on the shooting skills of futsal players.

REFERENCES

- Afandi, A., & Faisal, M. (2020). Upaya Meningkatkan Teknik Juggling Permainan Futsal Dengan Media Alat Bantu. *Jurnal Porkes*, 3(2), 142–148. <https://doi.org/10.29408/porkes.v3i2.3005>
- Agustan, B., & Hidayat, A. R. (2021). Play Teach Play: Pengaruhnya Terhadap Kemampuan Passing Futsal. *Physical Activity Journal*, 2(2), 159. <https://doi.org/10.20884/1.paju.2021.2.2.3875>
- Anggriawan, F. (2016). Tingkat Keterampilan Bermain Futsal Peserta Ekstrakurikuler Futsal Di SMP Negeri 6 Yogyakarta Tahun 2016. *Pendidikan Jasmani Kesehatan dan Rekreasi*, 1(12), 1–8. <https://journal.student.uny.ac.id/index.php/pjkr/article/view/4807>
- Ashari, R. F., & Adi, S. (2019). Pengembangan Model Latihan Menyerang Futsal Menggunakan Formasi 3-1. *Sport Science and Health*, 1(2), 2019. <http://journal2.um.ac.id/index.php/jfik/indexhttp://fik.um.ac.id/>
- Asep Sumpena, (2011). "Efektivitas Tendangan Penalti 6 meter antara punggung kaki, kaki bagian dalam dan ujung kaki pada permainan futsal putra". *Skripsi Diakses dari www.repository.upi.edu*http://www.repository.upi.edu/skripsiview.php?no_pada_tanggal_25_Desember_2015.
- Bangkit Gala Persada, K. (2019). Hubungan Motor Ability dengan keterampilan teknik dasar bermain futsal pada klub atlet muda futsal semarang tahun 2019. *Journal of Sport Coaching and Physical Education*, 4(2), 132–141. <https://journal.unnes.ac.id/sju/index.php/jscpe/article/view/37462>
- Festiawan, R. (2020). Pendekatan Teknik Dan Taktik: Pengaruhnya Terhadap Keterampilan Bermain Futsal. *Jurnal Pendidikan Jasmani dan Olahraga*, 3(2), 143–155. <https://journal.ipm2kpe.or.id/index.php/JPJO/article/view/1080>
- Habibul Rasyd, Ahmad Atiq, F. P. H. (2019). Tingkat Keterampilan Teknik Dasar Futsal Ekstrakurikuler Di SMA Negeri 1 Galing Kabupaten Sambas. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa*, 8(10), 1–12. <https://jurnal.untan.ac.id/index.php/jpdpb/article/view/37425>
- Hamzah, B., & Hadiana, O. (2018). Pengaruh Penggunaan Model Problem Based Learning

- Terhadap Keterampilan Passing Dalam Permainan Futsal. *JUARA: Jurnal Olahraga*, 3(1), 1–7. <http://jurnal.upmk.ac.id/index.php/juara/article/view/210>
- Kuncoro, R. adi C. (2016). Tingkat Keterampilan Dasar Bermain Futsal Peserta Ekstrakurikuler Futsal Di Sekolah Menengah Atas Negeri 3 Sragen. *Journal of Chemical Information and Modeling*, 1–81.
- Kusuma, R. W. (2019). Penerapan Pendekatan Taktis dan Gaya Mengajar Tugas dalam Pembelajaran Futsal. *TEGAR: Journal of Teaching Physical Education in Elementary School*, 2(2), 118–128. <https://doi.org/10.17509/tegar.v2i2.15484>
- Mashud, M., Hamid, A., & Abdillah, S. (2019). Pengaruh Komponen Fisik Dominan Olahraga Futsal Terhadap Teknik Dasar Permainan Futsal. *Gladi: Jurnal Ilmu Keolahragaan*, 10(1), 28–38. <https://doi.org/10.21009/gjik.101.04>
- Nosa, V. T. A., Sulaiman, I., Nurdin, F., & Praniata, A. R. (2019). Model Pembelajaran Shooting Futsal Untuk Siswa SMA. *Jurnal Pendidikan Olahraga*, 8(1), 27. <https://doi.org/10.31571/jpo.v8i1.1218>
- Novianto, T., & Nugraheningsih, G. (2021). Penguasaan Keterampilan Dasar Bermain Futsal Pada Siswa U-15 Akademi Futsal GMS Kabupaten Lahat Sumatera Selatan. *Jurnal Olympia*, 3(1), 1–6. <https://doi.org/10.33557/jurnalolympia.v3i1.1385>
- Oman Hadiana. (2020). Implementasi Pendekatan Taktis Dalam meningkatkan Motivasi Belajar Futsal. *Indonesian Journal of Science*, 1(1), 38–44. <http://jurnal.pusatsains.com/index.php/jsi/article/view/5>
- Prasetyo Widiyono, I., & Mudiono. (2021). Keterampilan Dasar Futsal Peserta Ekstrakurikuler di SMK Ma'arif 1 Kebumen Tahun Ajaran 2019/2020. *JUMORA: Jurnal Moderasi Olahraga*, 1(01), 10–17. <https://doi.org/10.53863/mor.v1i01.129>
- Setiawan, W. A., Festiawan, R., Heza, F. N., Kusuma, I. J., Hidayat, R., & Khurrohman, M. F. (2021). Peningkatan Keterampilan Dasar Futsal Melalui Metode Latihan Passing Aktif dan Pasif. *Jurnal Pendidikan Kesehatan Rekreasi*, 3(2), 270–278. <https://ojs.mahadewa.ac.id/index.php/jpkr/article/view/1066>
- Solihin, A. O. (2020). Tingkat Keterampilan Siswa pada Ekstrakurikuler Futsal Tingkat Sekolah Dasar. *Journal of Physical and Outdoor Education*, 2(2), 239–246. <https://doi.org/doi.org/10.37742/jpoe.v2i2.110>
- Susilo, R. R., & Bawono, M. N. (2021). Upaya Peningkatan Kelincahan Melalui Latihan Kombinasi Ladder-Cone Pada Pemain Ekstrakurikuler Futsal Siswa SMAN 3 Jombang. *Jurnal Kesehatan Olahraga*, 9(4), 223–228. <https://ejournal.unesa.ac.id/index.php/jurnal-kesehatan-olahraga/article/view/42896>
- Wibowo, P. A. (2018). Peningkatan Keaktifan Siswa Dalam Permainan Futsal Melalui Metode TGT Pada Siswa Kelas X Di SMA Selamat Pagi Indonesia Kota Batu. *JP.JOK (Jurnal Pendidikan Jasmani, Olahraga dan Kesehatan)*, 1, 14–23. <https://core.ac.uk/download/pdf/229306964.pdf>