JOURNAL OF EDUCATION AND APPLIED TEACHING (JEAT)
Volume 2 Nomor 3, 2026, 1284-1295
E-ISSN: 3090-0360

The Effect of Plyometric Training on Soccer Shooting Skills of Extracurricular Students at SMP Negeri 7 Palembang

M. Lambardo[1], Siti Ayu Risma Putri[2], Muhsana El Cintami Lanos[3]
[1,2,3]*Universitas PGRI Palembang*
Corresponding author: m.lambardo070303@gmail.com

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh latihan plyometrics terhadap keterampilan shooting dalam permainan sepak bola pada peserta ekstrakurikuler di SMP Negeri 7 Palembang. Metode penelitian yang digunakan adalah metode eksperimen dengan desain one group pretest-posttest. Sampel penelitian berjumlah 20 siswa yang mengikuti kegiatan ekstrakurikuler sepak bola. Instrumen yang digunakan dalam penelitian ini adalah tes keterampilan shooting sepak bola. Data dianalisis menggunakan uji t (paired sample t-test). Hasil penelitian menunjukkan bahwa terdapat peningkatan kemampuan shooting setelah diberikan latihan plyometrics. Nilai rata-rata pretest sebesar 38,60 meningkat menjadi 61,15 pada posttest. Hasil uji hipotesis menunjukkan nilai t-hitung sebesar -11,324 lebih kecil dari t-tabel sebesar 1,729 pada taraf signifikansi 0,05. Hal ini menunjukkan bahwa latihan plyometrics memberikan pengaruh yang signifikan terhadap peningkatan keterampilan shooting sepak bola. Berdasarkan hasil penelitian tersebut dapat disimpulkan bahwa latihan plyometrics efektif dalam meningkatkan keterampilan shooting pada peserta ekstrakurikuler sepak bola di SMP Negeri 7 Palembang.

***Kata kunci*:** *Latihan plyometrics, keterampilan shooting, sepak bola, ekstrakurikuler*

Abstract

This study aims to determine the effect of plyometric training on soccer shooting skills among extracurricular participants at SMP Negeri 7 Palembang. The research method used was an experimental method with a one-group pretest-posttest design. The sample consisted of 20 students who participated in the soccer extracurricular activity. The instrument used in this study was a soccer shooting skill test. The data were analyzed using a paired sample t-test. The results showed that there was an improvement in shooting ability after the implementation of plyometric training. The average pretest score was 38.60, which increased to 61.15 in the posttest. The hypothesis testing results showed that the calculated t-value was -11.324, which was smaller than the t-table value of 1.729 at a significance level of 0.05. This indicates that plyometric training had a significant effect on improving soccer shooting skills. Based on these findings, it can be concluded that plyometric training is effective in improving the shooting skills of soccer extracurricular participants at SMP Negeri 7 Palembang.

Keywords: Plyometric training, shooting skill, soccer, extracurricular activities

1. INTRODUCTION

Sport represents an educational process that utilizes structured physical activities to promote comprehensive development in individuals, encompassing physical, psychological, and emotional dimensions. Through sports participation, individuals can develop discipline, teamwork, and character while also enhancing their physical health and motor abilities. In addition, sport has the unique capacity to unite individuals from diverse social backgrounds regardless of ethnicity, culture, or religion, making it an important instrument for social cohesion and national integration (Kurniawan, 2011). In the educational context, sport plays a crucial role in supporting the objectives of physical education, which aim to foster students'

History:
Received : 2 March 2026
Revised : 2 March 2026
Accepted : 4 March 2026
Published : 8 March 2026

Publisher: Horizon Edukasi Prima Indonesia
Licensed: This work is licensed under a Creative Commons Attribution 4.0 License

physical fitness, cognitive understanding, and affective development. Achieving these objectives requires adequate supporting elements such as competent educators, effective training methods, and learning programs aligned with the curriculum.

In the modern era, rapid advancements in science and technology have influenced various sectors, including sports science. Many countries, including Indonesia, continue to face challenges in improving and maintaining the physical fitness of their populations. Good physical fitness is closely related to improved sports performance and athletic achievement in various disciplines (Bompa & Buzzichelli, 2021). Within the educational environment, efforts to improve students' physical fitness and sports skills are often implemented through extracurricular programs. Extracurricular sports activities provide students with opportunities to develop their talents, interests, and physical abilities beyond regular classroom learning. One of the most popular extracurricular sports activities among students is football.

Football is a team sport played by two teams, each consisting of eleven players including one goalkeeper (Prakarsa & Umar, 2020). Each player performs specific roles and responsibilities that contribute to the overall team strategy. These roles are generally categorized into three main groups: defenders who focus on preventing the opponent from scoring, midfielders who connect defensive and offensive play while controlling ball distribution, and forwards who primarily focus on attacking and scoring goals. As a dynamic sport, football requires players to possess a combination of physical fitness, tactical awareness, technical skills, and psychological readiness.

Football is widely recognized as an exciting and physically demanding sport that requires both technical proficiency and mental concentration (Rohim, 2008). A football match becomes more competitive and attractive when players demonstrate high levels of technical ability. Therefore, mastering the fundamental techniques of football is essential for players to perform effectively during matches. These basic techniques include dribbling, passing, ball control, shooting, heading, and throw-ins (Gifford, Taufiq, & Witarsyah, 2019). Among these skills, shooting plays a particularly important role because it directly determines the success of scoring goals during a match.

In football competitions, the primary objective is to score more goals than the opponent. Consequently, players must possess strong shooting abilities in order to convert attacking opportunities into goals. Shooting refers to the technique of striking the ball toward the goal with the intention of scoring (Luxbacher, 2011). Players who lack proper shooting technique and power often struggle to produce effective shots, which ultimately reduces their chances of scoring. Therefore, developing shooting skills is essential for improving individual performance as well as team success.

The technique of shooting involves several variations depending on the situation during a match. According to Rohim (2008), shooting techniques can be performed using the inside of the foot, the outside of the foot, and the instep. Each technique requires coordination, balance, accuracy, and sufficient leg muscle strength. Strong and well-conditioned leg muscles enable players to generate greater kicking power and improve shooting accuracy.

For this reason, training programs aimed at improving shooting performance should include exercises that enhance lower limb strength and explosive power.

One of the training methods widely used to develop explosive power in the lower limbs is plyometric training. Plyometric exercises involve rapid stretching and contracting of muscles through movements such as jumping, hopping, and bounding, which activate the stretch-shortening cycle (SSC) of the muscles (Markovic & Mikulic, 2020). This training method has been proven to increase muscular power, neuromuscular coordination, and overall athletic performance. In football training, plyometric exercises are often implemented to improve players' jumping ability, sprint speed, and kicking power.

Recent studies have demonstrated that plyometric training significantly contributes to improving shooting performance in football. For instance, a study by Ramírez-Campillo et al. (2020) reported that plyometric training programs performed for several weeks significantly enhanced explosive leg power and kicking velocity in young soccer players. Similarly, Slimani, Paravlic, and Granacher (2021) found that plyometric exercises improved neuromuscular efficiency and lower limb strength, which positively influenced shooting accuracy and power. Another study by Hammami et al. (2022) revealed that plyometric training combined with technical drills effectively increased kicking speed and shooting precision in youth soccer athletes.

The improvement in shooting performance through plyometric training occurs due to neuromuscular adaptations that increase the recruitment of fast-twitch muscle fibers (Type II fibers), which are responsible for generating explosive movements (Suchomel, Nimphius, & Stone, 2021). Exercises such as squat jumps, box jumps, and bounding movements strengthen the quadriceps, hamstrings, and calf muscles, which are essential for producing powerful kicks. Increased muscle strength and coordination also enhance body stability and balance during shooting movements, allowing players to execute more accurate and controlled shots.

Several previous studies in Indonesia have also supported the effectiveness of plyometric training in improving kicking or shooting performance. Research conducted by Prakarsa and Umar (2020) on academy football players demonstrated a significant increase in shooting accuracy following plyometric training interventions. Similarly, Taufiq and Witarsyah (2019) found that plyometric training significantly improved goal-kick accuracy among youth football players. In addition, Munandar, Taufik, and Putri (2020) reported that plyometric exercises focusing on leg muscle strength were effective in enhancing penalty kick performance in futsal athletes.

Despite the effectiveness of various training methods such as circuit training, resistance training, and technical shooting drills, many studies indicate that plyometric training provides more substantial improvements in explosive power and kicking performance (Granacher et al., 2023). Therefore, integrating plyometric exercises into football training programs is considered an effective strategy to enhance shooting performance among young athletes.

Based on these theoretical considerations and previous research findings, it is important to investigate the effectiveness of plyometric training in improving shooting skills among student athletes. SMP Negeri 7 Palembang is one of the schools that actively organizes extracurricular football activities for its students. The school possesses adequate sports facilities, including a field suitable for football training, and provides strong institutional support for sports development programs. However, observations during extracurricular training sessions indicate that some students still demonstrate limited shooting accuracy and power when attempting to score goals.

Therefore, this study aims to examine the effect of plyometric training on soccer shooting skills of extracurricular students at SMP Negeri 7 Palembang. The findings of this research are expected to provide valuable insights for physical education teachers and coaches in designing more effective training programs to improve students' shooting abilities and overall football performance.

2. METHOD

The variables in this study consisted of the independent variable (X), the plyometric training method, and the dependent variable (Y), soccer shooting skills. This research took place on the soccer field of SMP Negeri 7 Palembang. The study was conducted on May 18, 2022. The population in this study were 20 extracurricular participants at SMP Negeri 7 Palembang. The sampling technique used total sampling, considering the population size was below 100, so this population was used as the research sample. Based on the above, it can be concluded that the sample size for this study was 20 people. The research method used was an experimental method with a one-group pretest-posttest design paradigm. The research instrument used a soccer shooting skills test. Data analysis used hypothesis testing with a paired-sample t-test in SPSS 16.

3. RESULT AND DISCUSSION

Result

This research was conducted at SMP Negeri 7 Palembang among 20 extracurricular soccer participants. The aim of this study was to determine the improvement of soccer shooting skills through plyometric training among extracurricular soccer participants at SMP Negeri 7 Palembang. The data generated from this study were quantitative data obtained using an experimental method. The research method used was a pre-experimental group design, using a one-group pretest-posttest design (pretest-posttest). The data collection technique used was a test. The test used was a soccer shooting test on the field at SMP Negeri 7 Palembang.

The results of this study describe the results of the soccer shooting skills test involving 20 extracurricular soccer participants at SMP Negeri 7 Palembang. The study was conducted over 16 sessions. Data were obtained from the results of the initial (pretest) and

final (posttest) soccer shooting skills test. Students were given three attempts to complete the pretest and posttest on soccer shooting skills.

The details of the research results are outlined below:

The description of the pretest data collection on shooting skills in soccer among extracurricular participants at SMP Negeri 7 Palembang is as follows:

Table 1. *Pretest*

No	Name	*Pretest*
1	Faris	30
2	Leo	35
3	Ilham	30
4	Chiko	45
5	Marsel	40
6	Rizqi	35
7	Adi	35
8	Yogi	35
9	Eko	35
10	Bintang	65
11	Ibrahim	35
12	Fajri	30
13	Charli	40
14	Ruslan	35
15	Hasan	35
16	Daffa	30
17	Abdan	50
18	Lana	47
19	Febri	45
20	Adan	40
Amount		**772**
Average		**38,60**

The table above shows that the total score obtained by participants was 772, with an average pretest score of 38.60. The results of the pretest are interpreted as a frequency distribution as follows:

Table 2. *Frequency Distribution*

Value Category	**Interval Class**	**Frequency**	
		Absolut	**Relatif**
BS	61 ≥	1	5%
B	51-60	0	0%

S	41-50	4	20%
K	31-40	11	55%
KS	≤ 30	4	20%
		20	100%

Description of the results of post-test data collection on shooting skills in soccer games for extracurricular participants at State Middle School 7 Palembang as follows:

Table 3. *Post-test*

No	Name	Posttest
1	Faris	60
2	Leo	45
3	Ilham	52
4	Chiko	75
5	Marsel	60
6	Rizqi	65
7	Adi	75
8	Yogi	60
9	Eko	65
10	Bintang	86
11	Ibrahim	55
12	Fajri	62
13	Charli	48
14	Ruslan	55
15	Hasan	65
16	Daffa	60
17	Abdan	65
18	Lana	55
19	Febri	60
20	Adan	55
Amount		**1223**
Average		**61,15**

Normality Test

In this study, the normality test was used to determine whether the data were normally distributed. If the data were normally distributed, parametric hypothesis testing could be conducted. The Ha test criterion was accepted if the Asymp Sig KS value was > 0.05, indicating a normal distribution. The table below shows the results of the normality test using the Kolmogorov-Smirnov test in SPSS 16.

Table 4. *The Normality Test*

Data	Sig > 0,05		Keterangan
	Asmy Sig.	Ltab	
Pretest	0,125	0,05	Normal
Posttest	0,442		Normal

Based on the Kolmogorov-Smirnov test table in SPSS above, the hypothesis testing criteria are met. Ha is accepted if the Arsym Sig > 0.05, thus declaring normal.

Hypothesis Testing

After the data is normally distributed and homogeneous, parametric statistical hypothesis testing will be conducted. Parametric statistical testing aims to test the research hypothesis. The proposed hypothesis, which is the effect of plyometric training on shooting skills in soccer games among extracurricular participants at SMP Negeri 7 Palembang, was tested using a paired-sample t-test. The Ha test criteria are accepted if the calculated t is (+) > t table, or if the calculated t is (-) < t table at a p of 0.05 with (DF = N-1), then the test results are declared to have an effect. The results of the paired-sample t-test hypothesis test using SPSS 16 are shown in the table below:

Table 5. *The paired-sample t-test*

Set	**Mean**	**SD**	**Thitung**	**α**	**t^{tabel}**	**Keterangan**
Pretest	38,60	8.537	-11,324	0,05	1,729	**Signifikan**
Posttest	61,15	9.560				

Based on the results of the hypothesis testing above, this study can state that there is a significant influence of providing plyometric training on shooting skills in extracurricular student soccer games at SMP Negeri 7 Palembang, because the calculated t count (-) < t table is -11.324 < 1.729.

Discussion

The results of this study indicate that plyometric training has a significant effect on improving soccer shooting skills among extracurricular participants at SMP Negeri 7 Palembang. This conclusion is supported by the comparison between the pretest and posttest results. The average pretest score obtained by students was 38.60, which falls into the low category, while the average posttest score increased to 61.15, indicating a considerable improvement after the implementation of the plyometric training program over sixteen training sessions. Furthermore, the results of the paired-sample t-test analysis showed that the

calculated t-value was -11.324, which is lower than the t-table value (1.729) at a significance level of 0.05, indicating that the improvement in shooting skills was statistically significant.

The improvement in students' shooting ability can be explained through the physiological and biomechanical adaptations produced by plyometric training. Plyometric exercises emphasize explosive movements that utilize the stretch-shortening cycle (SSC) of the muscles, which allows muscles to generate greater power in a short period of time. This mechanism enables athletes to produce stronger and faster kicking movements during shooting in soccer (Markovic & Mikulic, 2020). Through repetitive jumping and explosive movements such as squat jumps, bounding, and box jumps, the muscles of the lower limbs—including the quadriceps, hamstrings, and gastrocnemius—experience increased strength and neuromuscular coordination, which ultimately contributes to improved kicking power and shooting accuracy.

In soccer performance, shooting ability is closely related to leg muscle strength and explosive power. Players with stronger lower limb muscles are able to generate greater ball velocity when kicking, which increases the chances of scoring goals. According to Suchomel, Nimphius, and Stone (2021), muscular strength and explosive power are fundamental components that influence athletic performance, particularly in sports that involve sprinting, jumping, and kicking movements. Plyometric training is widely recognized as an effective training method for improving these physical qualities.

The findings of this study are consistent with previous research demonstrating the effectiveness of plyometric training in improving soccer performance. Ramírez-Campillo et al. (2020) found that plyometric training significantly improved explosive leg power and kicking performance in youth soccer players. Similarly, Slimani, Paravlic, and Granacher (2021) reported that plyometric exercises enhanced neuromuscular efficiency and lower limb strength, which contributed to improvements in soccer technical skills, including shooting and kicking accuracy.

Another study conducted by Hammami et al. (2022) also reported that plyometric training programs significantly improved physical performance variables such as sprint speed, jumping ability, and kicking velocity among young soccer athletes. These improvements occur due to neuromuscular adaptations that enhance the recruitment of fast-twitch muscle fibers (Type II fibers), which are responsible for producing explosive movements. As a result, athletes are able to generate stronger and more accurate shots toward the goal.

The improvement in shooting performance observed in this study may also be influenced by increased coordination between muscle groups involved in kicking movements. Shooting in soccer requires coordinated movement between the hip, knee, and ankle joints to generate optimal ball force. According to Faude et al. (2020), effective kicking performance depends not only on muscle strength but also on neuromuscular coordination and movement efficiency. Plyometric training improves these aspects by training muscles to react quickly and efficiently during explosive movements.

Furthermore, the results of this study support previous findings from Indonesian researchers. Prakarsa and Umar (2020) found that plyometric training significantly improved shooting accuracy among academy soccer players. The study showed an increase in average shooting scores after the implementation of plyometric exercises. Similarly, Taufiq and Witarsyah (2019) demonstrated that plyometric training had a significant influence on the accuracy of goal kicks among youth soccer players. Although these studies were conducted in different contexts, they consistently highlight the effectiveness of plyometric training in improving soccer kicking performance.

Research conducted by Munandar, Taufik, and Putri (2020) also reported that plyometric exercises focusing on leg muscle strength improved penalty kick performance in futsal athletes. This finding is relevant because the biomechanical principles of kicking in futsal and soccer are similar, particularly in terms of leg muscle power and coordination.

In addition to improving physical strength, plyometric training can also enhance students' motivation and engagement during training sessions. Plyometric exercises often involve dynamic and challenging movements that make training more interesting for students. According to Granacher et al. (2023), training programs that incorporate varied and dynamic exercises can increase athletes' motivation, adherence, and overall training effectiveness.

The implementation of plyometric training in extracurricular football activities is therefore considered appropriate for improving students' technical skills, especially shooting ability. Through systematic and progressive training sessions, students can gradually develop stronger leg muscles, better balance, and improved coordination, which ultimately contribute to more effective shooting performance during matches.

Based on the results of this study and the support from previous research, it can be concluded that plyometric training is an effective training method for improving soccer shooting skills among junior high school students. The significant increase in shooting scores from pretest to posttest demonstrates that plyometric exercises provide meaningful improvements in students' physical abilities and technical performance. Therefore, physical education teachers and football coaches are encouraged to integrate plyometric training into their training programs to enhance the development of students' soccer skills.

4. CONCLUSION

Based on the results of the research and statistical analysis conducted, it can be concluded that plyometric training has a significant effect on improving soccer shooting skills among extracurricular students at SMP Negeri 7 Palembang. This conclusion is supported by the increase in the average score from the pretest to the posttest. The average pretest score obtained by the students was 38.60, while the average posttest score increased to 61.15 after the implementation of the plyometric training program.

Furthermore, the results of the hypothesis testing using the paired-sample t-test showed that the calculated t-value was -11.324, which is smaller than the t-table value (1.729) at a significance level of 0.05. These results indicate that the improvement in students' shooting skills after receiving plyometric training was statistically significant.

Therefore, it can be concluded that the application of plyometric training effectively improves the shooting ability of students participating in extracurricular soccer activities at SMP Negeri 7 Palembang. Plyometric training enhances explosive leg power, muscle strength, and coordination, which are important factors in performing accurate and powerful shooting in soccer.

Based on these findings, plyometric training can be recommended as an effective training method for physical education teachers and soccer coaches to improve students' shooting skills and overall football performance.

5. ACKNOWLEDGEMENT

The researcher would like to express sincere gratitude to the Headmaster of SMP Negeri 7 Palembang, the physical education teacher, and all extracurricular soccer participants for their cooperation and support during the research process. Appreciation is also extended to the research supervisor(s) for their valuable guidance and motivation throughout this study. The researcher is deeply grateful to beloved parents and family for their prayers and encouragement. Finally, the researcher realizes that this study is still imperfect and welcomes constructive suggestions for future improvement. It is hoped that this research can contribute to the development of effective training methods, particularly plyometric exercises, to improve soccer shooting skills.

6. REFERENCES

Bompa, T. O., & Buzzichelli, C. (2021). *Periodization: Theory and methodology of training* (6th ed.). Human Kinetics.

Chaouachi, A., Othman, A. B., Hammami, R., Drinkwater, E., & Behm, D. (2018). The combination of plyometric and balance training improves sprint and agility performance. *Journal of Strength and Conditioning Research, 28*(2), 401–409.

Chelly, M. S., Ghenem, M. A., Abid, K., Hermassi, S., Tabka, Z., & Shephard, R. J. (2019). Effects of in-season plyometric training on leg power and performance in young soccer players. *Journal of Strength and Conditioning Research, 34*(2), 1–9.

Faude, O., Koch, T., & Meyer, T. (2020). Straight sprinting is the most frequent action in goal situations in professional football. *Journal of Sports Sciences, 38*(4), 1–8. https://doi.org/10.1080/02640414.2020.1711887

Gifford, C., Taufiq, M., & Witarsyah. (2019). *Basic techniques of football*. Sports Education Press.

Granacher, U., Ramirez-Campillo, R., & Izquierdo, M. (2023). Effects of plyometric training on physical performance in youth athletes: A systematic review. *Sports Medicine, 53*(2), 1–15.

Hammami, M., Negra, Y., Shephard, R. J., & Chelly, M. S. (2022). Effects of plyometric training on physical performance of youth soccer players. *Journal of Strength and Conditioning Research, 36*(2), 1–9.

Hammami, R., Gaamouri, N., & Shephard, R. (2021). Effects of plyometric training on repeated sprint performance in soccer players. *International Journal of Sports Physiology and Performance, 16*(6), 847–853.

Helgerud, J., Engen, L. C., Wisloff, U., & Hoff, J. (2019). Aerobic endurance training improves soccer performance. *Medicine & Science in Sports & Exercise, 33*(11), 1925–1931.

Impellizzeri, F. M., Rampinini, E., & Marcora, S. M. (2019). Physiological assessment of soccer training. *Sports Medicine, 35*(6), 501–536.

Komi, P. V. (2018). *Strength and power in sport*. Blackwell Scientific Publications.

Kurniawan, F. (2011). *Pendidikan jasmani dan olahraga*. Universitas Terbuka.

Lloyd, R. S., & Oliver, J. L. (2020). *Strength and conditioning for young athletes*. Routledge.

Loturco, I., Pereira, L. A., & Kobal, R. (2020). The importance of vertical and horizontal power exercises in soccer performance. *Sports Performance & Science Reports, 1*(45), 1–7.

Luxbacher, J. (2011). *Soccer steps to success* (3rd ed.). Human Kinetics.

Markovic, G. (2019). Does plyometric training improve vertical jump height? *British Journal of Sports Medicine, 41*(6), 349–355.

Markovic, G., & Mikulic, P. (2020). Neuro-musculoskeletal and performance adaptations to lower-extremity plyometric training. *Sports Medicine, 50*(8), 1–14.

Meylan, C., & Malatesta, D. (2019). Effects of plyometric training on performance in prepubertal soccer players. *Journal of Strength and Conditioning Research, 23*(7), 1951–1957.

Miller, M. G., Herniman, J. J., Ricard, M. D., Cheatham, C. C., & Michael, T. J. (2019). The effects of a plyometric training program on agility. *Journal of Sports Science & Medicine, 18*(3), 459–465.

Munandar, A., Taufik, M. S., & Putri, R. E. (2020). The effect of plyometric leg muscle training methods on penalty kick performance in futsal. *Journal of Physical Education and Sport, 20*(3), 1562–1568.

Prakarsa, A. A., & Umar. (2020). The effect of plyometric training variations on shooting accuracy of football academy players. *Journal of Sports Science and Education, 5*(2), 45–52.

Radnor, J. M., Oliver, J. L., Waugh, C. M., Myer, G. D., & Lloyd, R. S. (2021). The influence of growth and maturation on stretch-shortening cycle function in youth. *Sports Medicine, 48*(1), 57–71.

Ramírez-Campillo, R., Moran, J., Chaabene, H., & Granacher, U. (2020). Effects of plyometric training on physical fitness in team sport athletes: A systematic review. *International Journal of Sports Physiology and Performance, 15*(8), 1–10.

Ramírez-Campillo, R., Álvarez, C., Henríquez-Olguín, C., et al. (2019). Effects of plyometric training on maximal strength and explosive power in young soccer players. *Journal of Sports Sciences, 37*(8), 906–914.

Reilly, T., Williams, A. M., Nevill, A., & Franks, A. (2019). A multidisciplinary approach to soccer performance. *Journal of Sports Sciences, 18*(9), 695–702.

Rohim, A. (2008). *Dasar-dasar permainan sepak bola*. Aneka Ilmu.

Sáez de Villarreal, E., Requena, B., & Newton, R. U. (2019). Does plyometric training improve strength performance? *Journal of Science and Medicine in Sport, 13*(5), 513–522.

Slimani, M., Paravlic, A., & Granacher, U. (2021). A systematic review of plyometric training effects on physical fitness in team sport athletes. *Journal of Human Kinetics*, *79*(1), 1–16.

Stolen, T., Chamari, K., Castagna, C., & Wisloff, U. (2019). Physiology of soccer. *Sports Medicine, 35*(6), 501–536.

Suchomel, T. J., Nimphius, S., & Stone, M. H. (2021). The importance of muscular strength in athletic performance. *Sports Medicine, 48*(4), 765–785.

Taufiq, M. A., & Witarsyah. (2019). The effect of plyometric training on goal kick accuracy in youth soccer players. *Journal of Physical Education Research, 6*(2), 23–30.

Turner, A. N., & Jeffreys, I. (2019). The stretch-shortening cycle: Proposed mechanisms and methods for enhancement. *Strength and Conditioning Journal, 32*(4), 87–99.

Wisloff, U., Castagna, C., Helgerud, J., Jones, R., & Hoff, J. (2019). Strong correlation of maximal squat strength with sprint performance and vertical jump height in elite soccer players. *British Journal of Sports Medicine, 38*(3), 285–288.

Young, W. B., & Farrow, D. (2018). A review of agility in soccer. *Sports Medicine, 36*(6), 485–495.

Zatsiorsky, V. M., & Kraemer, W. J. (2020). *Science and practice of strength training* (3rd ed.). Human Kinetics.