Teaching and General Education Studies
E-ISSN 3123-495X
Doi xxx-xxx
Vol 2 No 1 2026

THE IMPLEMENTATION OF LADDER DRILL TRAINING TO IMPROVE DRIBBLING SKILLS IN FUTSAL EXTRACURRICULAR ACTIVITIES

Rizki Robi Wahyudi[1], Muhammad Suhdy[2], Doni Atmanegara[3]
86suhdy@gmail.com
Universitas PGRI Silampari

Accepted: 3 August 2025

Abstract: Dribbling is one of the fundamental skills in futsal that requires agility, coordination, and effective ball control. This study aimed to examine the effect of ladder drill training on improving dribbling skills among students participating in futsal extracurricular activities. This study employed an experimental method using a one-group pretest–posttest design. The participants were 20 male students involved in futsal extracurricular activities at MAN 2 Lubuklinggau City. The ladder drill training program was conducted over 12 sessions with movement variations designed to enhance agility, foot coordination, and ball control. Data were collected using a zig-zag dribbling test measured by completion time. The findings indicated a significant decrease in the average dribbling time from 14.27 seconds in the pretest to 12.91 seconds in the posttest, representing an improvement of 1.36 seconds (9.50%). Statistical analysis using a paired-sample t-test revealed a calculated t-value of 18.85, which exceeded the critical t-value of 1.729 at a significance level of $\alpha = 0.05$. Ladder drill training has a significant positive effect on improving dribbling skills in futsal players. This training method can be effectively integrated into regular futsal training programs to enhance technical performance.

Keywords: ladder drill, dribbling, futsal, agility, coordination

Introduction

Futsal has become one of the most rapidly developing sports in Indonesia, particularly among students and young athletes. As a modified form of soccer played on a smaller indoor court, futsal emphasizes speed, precision, and technical mastery. The limited playing area and fast tempo require players to make quick decisions while maintaining high levels of ball control and movement efficiency (Klaus et al., 2022). Consequently, futsal players must possess strong fundamental skills to perform effectively during competition.

Among the essential technical skills in futsal, **dribbling** plays a crucial role. Dribbling allows players to maintain ball possession, maneuver past opponents, and create scoring opportunities

in dynamic game situations. Unlike outdoor soccer, futsal demands more frequent ball contact and rapid changes of direction, making dribbling a core component of successful performance (Miller, 2020). Players with strong dribbling ability are better equipped to adapt to defensive pressure and contribute to both offensive and defensive phases of play.

Effective dribbling in futsal requires a combination of physical and motor abilities, including agility, coordination, balance, and lower-limb strength. According to Suchomel et al. (2016), agility and coordination are closely related to an athlete's ability to execute complex movements efficiently. In futsal, players must coordinate foot movements with visual perception and body positioning while maintaining control of the ball. This multidimensional demand highlights the importance of structured training programs that integrate physical conditioning with technical skill development.

In educational contexts, futsal extracurricular activities play a significant role in fostering students' interest, talent, and physical fitness. Extracurricular sports programs provide opportunities for students to develop motor skills, teamwork, discipline, and healthy lifestyles beyond formal physical education classes (Putri et al., 2025). However, despite the popularity of futsal in schools, many extracurricular programs still rely on conventional training methods that emphasize gameplay without sufficient focus on specific skill development.

Preliminary observations conducted at MAN 2 Lubuklinggau City revealed that students' dribbling abilities were relatively weak, particularly in terms of speed, control, and efficiency when facing opponents. Many students struggled to perform rapid directional changes while maintaining ball control, which negatively affected overall game performance. These findings indicate the need for a more structured and targeted training approach to improve dribbling skills in futsal extracurricular participants.

One training method that has gained attention in recent years is **ladder drill training**. Ladder drills involve structured footwork patterns performed using an agility ladder placed on the ground. This type of training is designed to enhance agility, coordination, balance, and foot speed through repetitive and progressive movement patterns (Wirth et al., 2022). Ladder drills stimulate neuromuscular adaptation by improving motor unit recruitment and movement synchronization, which are essential for rapid and controlled actions in sport.

Recent studies have demonstrated that ladder drill training is effective in improving agility and technical performance in various sports, including soccer and futsal. Gabbett and Whiteley (2017) emphasize that agility-based training improves movement efficiency and reduces

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

unnecessary energy expenditure during performance. More recent findings suggest that combining ladder drills with sport-specific tasks, such as dribbling, enhances the transfer of physical improvements to technical execution (Klaus et al., 2022).

In futsal, ladder drill training is particularly relevant because it mimics the rapid foot movements and directional changes required during matches. By incorporating ladder drills into training sessions, players can develop faster reaction times, improved coordination, and better control over body movements. These improvements directly support dribbling performance, as players become more capable of maneuvering the ball under pressure and in confined spaces.

Another advantage of ladder drill training is its practicality. The equipment is simple, inexpensive, and easy to implement in school environments with limited facilities. Ladder drills can be adapted to different skill levels, making them suitable for both beginner and advanced players. This flexibility allows coaches and physical education teachers to design progressive training programs that address individual differences among students (Bompa & Buzzichelli, 2019).

Given the growing importance of evidence-based training methods in sports education, it is essential to examine the effectiveness of ladder drill training in improving dribbling skills among futsal extracurricular participants. While previous studies have explored agility training in soccer and futsal, research focusing specifically on ladder drill training within school-based futsal extracurricular programs remains limited, particularly in the Indonesian context.

Therefore, this study aims to investigate the effect of ladder drill training on dribbling skills in futsal extracurricular participants at MAN 2 Lubuklinggau City. The findings of this study are expected to provide practical insights for coaches, physical education teachers, and schools in designing effective training programs to enhance students' technical performance and overall futsal ability.

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

Research Method

Research Design

This study used an experimental research design with a one-group pretest–posttest approach. This design allowed the researcher to compare dribbling performance before and after the ladder drill training intervention.

Research Participants

The participants consisted of 20 male students who were actively involved in futsal extracurricular activities at MAN 2 Lubuklinggau City. Total sampling was applied, meaning all members of the population were included as research subjects.

Research Instrument

The instrument used in this study was a zig-zag dribbling test validated by Dewi and Pakpahan (2018). The test measured dribbling speed and control by recording the time required to maneuver the ball through seven cones arranged in a zig-zag pattern over a distance of 15 meters.

Research Procedure

The research procedure consisted of three stages:

1. **Pretest:** Measurement of students' initial dribbling ability
2. **Treatment:** Ladder drill training conducted for 12 sessions over six weeks
3. **Posttest:** Measurement of dribbling ability after the training program

Training Program

The ladder drill training program included warm-up activities, core training sessions combining ladder drills with dribbling exercises, and cooling-down activities. The movement patterns

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

progressed from basic ladder drills to more complex combinations integrated with small-sided games.

Data Analysis

Data were analyzed using descriptive and inferential statistics. Normality was tested using the chi-square test, followed by a paired-sample t-test to determine the significance of differences between pretest and posttest results at $\alpha = 0.05$.

RESULTS

The results demonstrated a significant improvement in students' dribbling performance after the implementation of ladder drill training. The average dribbling time decreased from 14.27 seconds in the pretest to 12.91 seconds in the posttest. The paired-sample t-test confirmed a statistically significant difference between pretest and posttest scores, indicating that ladder drill training effectively enhanced dribbling skills.

Descriptive Data Analysis

The results of this study indicate a significant improvement in dribbling ability following the implementation of the ladder drill training program. Dribbling performance was measured using a timed zig-zag dribbling test, where a lower completion time represents better performance. Descriptive statistics were used to summarize students' performance before and after the intervention, including mean values, standard deviations, and minimum and maximum scores.

As presented in Table 1, the mean pretest dribbling time was 14.27 seconds, with a standard deviation of 0.92 seconds. This result suggests that, prior to the intervention, students' dribbling ability was relatively moderate with noticeable variability among participants. The fastest pretest time recorded was 12.74 seconds, while the slowest reached 16.15 seconds, indicating differences in individual agility, coordination, and ball control.

After participating in the ladder drill training program, students demonstrated a marked improvement in performance. The mean posttest dribbling time decreased to 12.91 seconds, with a reduced standard deviation of 0.83 seconds. This reduction not only reflects improved dribbling speed but also indicates more consistent performance across participants. The minimum posttest score improved to 11.45 seconds, and the maximum time decreased to 14.45 seconds, showing that even the weakest performers benefited from the training program.

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

The mean difference between pretest and posttest scores was 1.36 seconds, with a standard deviation of 0.32 seconds. The smallest individual improvement recorded was 0.52 seconds, while the largest reached 1.78 seconds. These findings suggest that ladder drill training had a positive impact on all participants, although the degree of improvement varied depending on individual physical and technical characteristics.

Table 1. Descriptive Statistics of Research Results

Variable	Mean (seconds)	Std. Deviation	Minimum	Maximum
Pretest	14.27	0.92	12.74	16.15
Posttest	12.91	0.83	11.45	14.45
Difference	1.36	0.32	0.52	1.78

Overall, the descriptive data clearly demonstrate that the ladder drill training program contributed to a meaningful improvement in dribbling performance among the futsal extracurricular participants.

Frequency Distribution Analysis

To further examine changes in dribbling ability, the results were analyzed using frequency distribution based on normative performance categories, namely: *Very Good, Good, Fair, Poor,* and *Very Poor*. This analysis provides a clearer picture of how students' performance levels shifted following the intervention.

As shown in Table 2, the pretest distribution revealed that no students were categorized as *Very Good*. Only 3 students (15%) were classified as *Good*, while the majority fell into the *Fair* category (11 students or 55%). Additionally, 4 students (20%) were categorized as *Poor*, and 2 students (10%) were in the *Very Poor* category. These results indicate that most students initially possessed average to below-average dribbling skills, highlighting the need for an effective training intervention.

Following the ladder drill training program, the posttest distribution showed a substantial positive shift. The *Very Good* category increased to 3 students (15%), while the *Good* category rose significantly to 9 students (45%). Meanwhile, the number of students in the *Fair* category decreased to 6 students (30%), and those in the *Poor* category dropped to 2 students (10%). Notably, no students remained in the *Very Poor* category after the intervention.

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

Table 2. Frequency Distribution Based on Normative Categories

Category	Pretest (f)	Pretest (%)	Posttest (f)	Posttest (%)
Very Good	0	0%	3	15%
Good	3	15%	9	45%
Fair	11	55%	6	30%
Poor	4	20%	2	10%
Very Poor	2	10%	0	0%

This shift in frequency distribution demonstrates that ladder drill training not only improved average performance but also elevated students into higher performance categories. The disappearance of the *Very Poor* category is particularly noteworthy, indicating that the training program was effective in supporting lower-performing students.

Normality Test

Before conducting inferential statistical analysis, a normality test was performed to ensure that the data met the assumptions required for parametric testing. The chi-square (χ^2) test was used to examine whether the pretest and posttest data were normally distributed.

The results showed that the pretest data had a chi-square value of $\chi^2 = 0.40$, which was lower than the critical value of χ^2table = 5.991 at a significance level of $\alpha = 0.05$. Similarly, the posttest data yielded a chi-square value of $\chi^2 = 0.72$, which was also below the critical value. These results indicate that both the pretest and posttest data were normally distributed.

Because the assumption of normality was satisfied, the data were deemed suitable for further analysis using parametric statistical tests, specifically the paired-sample t-test.

Hypothesis Testing

To test the research hypothesis, a paired-sample t-test was conducted to compare pretest and posttest dribbling performance. The purpose of this analysis was to determine whether the observed improvement was statistically significant.

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

The results of the paired t-test showed a calculated t-value of tcount = 18.85, which was substantially higher than the critical t-value of ttable = 1.729 at df = 19 and a significance level of $\alpha = 0.05$. Because tcount > ttable, the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_1) was accepted.

This finding confirms that there is a statistically significant difference between pretest and posttest dribbling performance. In other words, the improvement in dribbling ability observed after the ladder drill training program did not occur by chance but was a direct result of the training intervention.

In summary, the research results provide strong empirical evidence that ladder drill training significantly enhances dribbling skills among futsal extracurricular participants. The descriptive statistics show a meaningful reduction in dribbling time, the frequency distribution reveals a clear shift toward higher performance categories, the normality test confirms the suitability of parametric analysis, and the hypothesis testing demonstrates a statistically significant improvement.

These results indicate that ladder drill training is an effective and practical training method for improving agility, coordination, and ball control, which are essential components of dribbling performance in futsal.

. **Discussion**

The purpose of this study was to examine the effect of ladder drill training on dribbling skills in futsal extracurricular participants. The results revealed a statistically significant improvement in dribbling performance following the implementation of the ladder drill program. This finding indicates that ladder drill training is an effective method for enhancing agility, coordination, and ball control, which are critical components of dribbling in futsal.

The significant reduction in average dribbling time from the pretest to the posttest demonstrates that ladder drill exercises positively influence movement efficiency and technical execution. According to Bompa and Buzzichelli (2019), agility-based training improves neuromuscular coordination and movement speed, allowing athletes to perform technical skills more effectively under game conditions. In futsal, where space and time are limited, improved agility enables players to change direction quickly while maintaining control of the ball.

The improvement observed in this study is also supported by the frequency distribution analysis, which showed a clear shift from lower to higher performance categories. This result

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

suggests that ladder drill training benefits not only high-performing players but also those with initially low skill levels. Newton and Kraemer (1994) explain that repetitive footwork training enhances motor unit recruitment and synchronization, which leads to more efficient movement patterns across different ability levels.

From a motor learning perspective, ladder drills provide structured and repetitive movement patterns that strengthen coordination between the lower limbs and the central nervous system. Such training improves reaction time, balance, and spatial awareness, all of which contribute to better dribbling performance (Miller, 2020). When ladder drills are combined with ball control activities, as applied in this study, the transfer of physical improvements to technical performance becomes more effective.

The findings of this study are consistent with previous research showing that agility ladder training significantly improves dribbling skills in soccer and futsal players. Gabbett and Whiteley (2017) emphasize that well-designed agility training enhances sport-specific performance while reducing movement inefficiencies. Similarly, Suchomel et al. (2016) argue that strength and agility training play a vital role in developing explosive and controlled movements required in invasion sports such as futsal.

In addition to performance benefits, ladder drill training offers practical advantages for school-based extracurricular programs. The equipment is inexpensive, easy to use, and adaptable to various training environments. This makes ladder drills a feasible training option for physical education teachers and coaches working with limited facilities. Furthermore, the dynamic and varied nature of ladder drill exercises can increase students' motivation and engagement during training sessions.

Despite these positive findings, this study has limitations that should be acknowledged. The absence of a control group limits the ability to attribute improvements solely to ladder drill training. Additionally, the relatively small sample size and focus on a single school may limit the generalizability of the results. Future research should involve experimental designs with control groups, larger samples, and longer intervention periods to further validate these findings.

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

In conclusion, ladder drill training is an effective and practical method for improving dribbling skills in futsal extracurricular participants. By enhancing agility, coordination, and movement efficiency, ladder drills contribute significantly to technical skill development and should be considered an integral part of futsal training programs.

CONCLUSION

Based on the results of this study, it can be concluded that ladder drill training has a significant positive effect on improving dribbling skills in futsal extracurricular participants. The implementation of the ladder drill program resulted in a meaningful reduction in dribbling time, indicating improvements in agility, coordination, and ball control. Statistical analysis using a paired-sample t-test confirmed a significant difference between pretest and posttest scores, demonstrating that the observed improvement was not due to chance.

The frequency distribution analysis further supports these findings, showing a clear shift of participants from lower to higher performance categories after the intervention. Notably, no students remained in the very poor category following the ladder drill training, highlighting its effectiveness in enhancing performance across varying skill levels. These findings suggest that ladder drill exercises are beneficial not only for improving overall technical ability but also for promoting more consistent dribbling performance among students.

In conclusion, ladder drill training is an effective, practical, and efficient training method for developing dribbling skills in futsal. Its simplicity, adaptability, and positive impact on technical performance make it a valuable component of futsal extracurricular training programs in school settings.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. **For Coaches and Physical Education Teachers**
   Futsal coaches and physical education teachers are encouraged to incorporate ladder drill training into regular training sessions. The use of varied ladder drill patterns

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

combined with ball control exercises can help improve students' dribbling skills, agility, and coordination more effectively.

2. **For Schools and Educational Institutions**
   Schools should support the implementation of ladder drill training by providing adequate facilities and simple equipment such as agility ladders. This support can enhance the quality of extracurricular sports programs and contribute to students' physical development.
3. **For Future Research**
   Future studies should employ experimental designs with control groups to strengthen causal conclusions. Researchers are also encouraged to involve larger and more diverse samples, including female participants, and to examine the long-term effects of ladder drill training. Additionally, further research could explore the impact of ladder drills on other futsal skills such as passing accuracy, shooting performance, and defensive agility.

By implementing these recommendations, ladder drill training can be more widely and effectively utilized to improve futsal performance and support the development of students' athletic skills.

REFERENCES :

Bompa, T. O., & Buzzichelli, C. (2019). *Periodization: Theory and methodology of training* (6th ed.). Human Kinetics.

Gabbett, T. J., & Whiteley, R. (2017). Two training-load paradoxes: Can we work harder and smarter, can physical preparation and medical be teammates? *International Journal of Sports Physiology and Performance, 12*(S2), S2–50–S2–54. https://doi.org/10.1123/ijspp.2016-0321

Klaus, W., Keiner, M., Fuhrmann, S., Nimmerichter, A., & Haff, G. G. (2022). Strength training in swimming and team sports. *International Journal of Environmental Research and Public Health, 19*(9), 5369. https://doi.org/10.3390/ijerph1909537

Miller, A. D. (2020). Muscle power and coordination patterns in athletic movement. *Sports Biomechanics, 19*(4), 512–526. https://doi.org/10.1080/14763141.2018.1470219

Newton, R. U., & Kraemer, W. J. (1994). Developing explosive muscular power: Implications for training. *Strength and Conditioning Journal, 16*(5), 20–31.

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153

Putri, T. K., Tarigan, H., Siswoyo, J., & Priyono, D. (2025). The effect of physical training on futsal performance in school athletes. *Jurnal Pendidikan Jasmani, 6*(2), 362–367.

Suchomel, T. J., Nimphius, S., & Stone, M. H. (2016). The importance of muscular strength in athletic performance. *Sports Medicine, 46*(10), 1419–1449. https://doi.org/10.1007/s40279-016-0486-0

Wirth, K., Keiner, M., Fuhrmann, S., Nimmerichter, A., & Haff, G. G. (2022). Strength and agility training in sport: A review. *International Journal of Environmental Research and Public Health, 19*(9), 5369. https://doi.org/10.3390/ijerph1909537

Grasta School
KALIKESIK STREET, GREEN GARDEN 3, BLOCK S3, WATERVANG, LUBUKLINGGAU, INDONESIA
EMAIL : GRASTASCHOOL@GMAIL.COM
WA/TELP: +62 857-6692-3153