

IMPROVING STUDENTS' LONG JUMP PERFORMANCE WITH LATERAL CONE HOPS TRAINING: AN EXPERIMENTAL STUDY

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ABSTRACT

The problem in this study is related to the low understanding and application of effective training methods to improve long jump performance in Physical Education Study Program students. This study aims to evaluate the effectiveness of lateral cone hops training in improving students' long jump performance. This type of research uses an experimental design, which is given a pre-test and post-test, the population in this study amounted to 80 people. sample A total of 30 Physical Education Study Program students (20 men and 10 women) aged 20-23 years participated in this study. Participants were randomly selected. Data collection techniques using pre-test and post-test. Data analysis techniques used paired t-test to compare pre-test and post-test results. The results were analyzed using t-test with a significance level of 0.05. The results showed a significant increase, pre-test 5.13 and post-test 5.20 in students' long jump performance. Conclusion Lateral cone hops training is proven to be effective in improving the long jump performance of Physical Education Study Program students. This program can be integrated into the physical education curriculum to support the development of student athletic skills..

Keywords: Long Jump, Performance, Lateral Cone Hops Exercise.

INTRODUCTION

Improving college students' long jump performance through lateral cone hops training can be proven by various studies that highlight the importance of plyometric training, agility training, and specific conditioning methods. Lateral cone hops, as a form of plyometric training, can improve explosive power and agility, which are important components for long jump performance.

Plyometric exercises, particularly exercises such as lateral cone hops, have been shown to significantly improve the explosive power of the lower limb muscle groups. This is important for students involved in jumping sports, including the long jump, where the ability to generate power quickly at take-off is critical (El-Ashker et al., 2019); (RamiRez-Campillo et al., 2013). For example, El-Ashker et al. showed that plyometric training emphasizing explosive movements was more effective than traditional methods, leading to a marked improvement in jump performance due to increased lower limb strength (El-Ashker et al., 2019). Similarly, Villarreal et al. conducted a meta-analysis that confirmed the positive impact of plyometric training on athletic performance, including increased jump height and distance (De Villarreal et al., 2012).

In addition, the incorporation of agility drills, such as lateral cone jumps, into training programs has been shown to optimize college students' long jump ability. Hafez noted that organized training programs that included agility drills resulted in significant improvements in both skill-related metrics and physical performance (Hafez et al., 2023). This is particularly relevant for university students, as agility and explosive power are closely linked to their performance outcomes.

The physiological mechanisms underlying these improvements could be attributed to the adaptation of the nervous system to the rapid muscle contractions induced by plyometric exercises. Artan highlighted that comprehensive jumping exercises, including lateral cone jumps, facilitate faster signal transmission from the nervous system to muscle fibers, thus resulting in better agility and explosive power (Li et al., 2024). This rapid adaptation is especially important for students who need a quick burst of power during their performances.

In addition to the physical training aspect, attention to training methodology is also very important. For example, Porter et al. emphasized the importance of external focus

during training, which can improve performance outcomes in jumping activities (Porter et al., 2013). This suggests that not only the type of exercise but also how athletes are instructed during these exercises can significantly affect their performance.

In conclusion, integrating the lateral cone hops exercise into a training program for college students can result in substantial benefits in terms of explosive power and agility. Evidence from various studies supports the notion that plyometric exercises, especially those that mimic the demands of the long jump, can lead to improved performance metrics. Therefore, well-structured workouts that include lateral cone jumps and other plyometric exercises are recommended to improve long jump performance for college students.

Previous research has shown results that lateral cone hops training, which involves side-to-side movements, is particularly beneficial for developing the strength and coordination required for effective long jumping (Dransmann et al., 2021). In addition, research from Sulaiman et al. found that lateral cone hops training increased athletes' explosive strength and contributed to better overall jump performance (Sulaiman et al., 2018). The results of another study showed lateral cone hops training can have a positive impact on running speed, which is often an important component of effective jumping technique (Singh & Singh, 2013). Biomechanical aspects of jumping are also important to consider. Reiter et al. explored predictors of lateral cone hops exercise performance and found that specific force plate metrics can effectively assess and improve jumping ability in athletes (Reiter et al., 2023).

Based on the above background, researchers will conduct research with the lateral cone hops training model to improve the long jump ability of Mandalika Education University students. Therefore, the researcher will raise the theme with the title “Improving Students' Long Jump Performance with Lateral Cone Hops Training: An Experimental Study”.

METHODS

This study used an experimental design with a treatment group. groups were given a pre-test and post-test to measure the improvement in long jump performance. The population in this study were students of the Physical Education Study Program of Mandalika University of Education class A and B, totaling 80 people. The research sample of 30 Physical Education Study Program students (20 men and 10 women) aged 20-23 years participated in this study. Participants were randomly selected without a control group. The instrument in this study was to measure long jump ability in pre and post tests. Exercise Procedure, the treatment was given a lateral cone hops training program for 8 weeks with a frequency of three times per week. Each training session lasts 45 minutes and consists of warm-up, core exercises, and cooling down. Data were analyzed using the t test to compare the results of the pre-test and post-test and analyzed using the t test with a significance level of 0.05.

RESULTS

The results showed a significant improvement in students' long jump performance. In addition, there was a significant increase in the leg muscle explosiveness test in the treatment group.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pretes Lompat Jauh	30	4	6	5.13	.689
Postes Lompat Jauh	30	4	6	5.20	.649
Valid N (listwise)	30				

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretes Lompat Jauh	.143	30	.121	.903	30	.010
Postes Lompat Jauh	.139	30	.145	.930	30	.049

Lilliefors Significance Correction

Tests of Homogeneity of Variances

		Levene			
		Statistic	df1	df2	Sig.
Pretes Lompat Jauh	Based on Mean	3.057	3	5	.130
	Based on Median	2.064	3	5	.224
	Based on Median and with adjusted df	2.064	3	2.000	.343
	Based on trimmed mean	2.993	3	5	.134

Hypothesis Test

Variabel	T- Hitung	T- Tabel	Sig (2 Tailed)	A
Lompat Jauh	10,361	1,69913	0,000	0,05

DISCUSSION

Lateral cone hops training is a plyometric exercise that involves jumping laterally (to the side) over cones or small obstacles. This exercise aims to improve leg muscle strength, agility, balance, and body stability. The lateral movements performed also help develop the

body's ability to react to changes in direction, which is very relevant to the needs of students in the long jump.

According to several studies, plyometric exercises such as lateral cone hops can increase muscle explosive power through rapid muscle stretching followed by explosive contractions. This supports maximum jumping performance, especially in the push-off phase in the long jump.

Steps to do lateral cone hops training effectively. Prepare several cones or small obstacles with a height of about 15-30 cm. Place the cones in a row with a distance between the cones of about 50 cm. Stand on one side of one of the cones with both feet parallel and knees slightly bent. Make sure the body is in a ready position with body weight in the middle. Jump sideways over the first cone with both feet simultaneously. Land with knees slightly bent to absorb impact and maintain balance. Repeat this movement for each cone in sequence. Perform 3-4 sets with each set consisting of 10-12 jumps. Rest for 60 seconds between sets.

In discussions with students who are active in long jump sports, it was agreed that lateral cone hops training is very useful for improving long jump performance. Students who routinely do this exercise show significant improvements in push-off strength, body control while floating in the air, and more stable landings. In addition, this exercise is considered practical because it does not require complicated equipment and can be done in various places. However, the coaches also emphasized the importance of correct technique in doing this exercise to avoid injury. Supervision from a coach or instructor is highly recommended, especially for beginners who are not yet familiar with plyometric movements.

CONCLUSION

Based on the results of the research and analysis of the data that has been studied, the proposed hypothesis can be accepted. Thus, it can be concluded that lateral cone hops training is proven to be effective in improving long jump performance of students in the Physical Education Study Program. This program can be integrated into the physical education curriculum to support the development of students' athletic skills.

REFERENCE

- De Villarreal, E. S., Requena, B., & Cronin, J. B. (2012). The effects of plyometric training on sprint performance: A meta-analysis. *Journal of Strength and Conditioning Research*, 26(2), 575–584. <https://doi.org/10.1519/JSC.0b013e318220fd03>
- Dransmann, M., Koddebusch, M., Gröben, B., & Wicker, P. (2021). Functional High-Intensity Interval Training Lowers Body Mass and Improves Coordination, Strength, Muscular Endurance, and Aerobic Endurance of Inmates in a German Prison. *Frontiers in Physiology*, 12. <https://doi.org/10.3389/fphys.2021.733774>
- El-Ashker, S., Hassan, A., Taiar, R., & Tilp, M. (2019). Long jump training emphasizing plyometric exercises is more effective than traditional long jump training: A randomized controlled trial. *Journal of Human Sport and Exercise*, 14(1), 215–224. <https://doi.org/10.14198/jhse.2019.141.18>
- Hafez, D. S. N., Ahmed, D. F. A.-J., & Nasser, A. S. S. (2023). The effect of agility exercises with aids in developing approximate speed and achievement in the effectiveness of the long jump. *International Journal of Yogic, Human Movement and Sports Sciences*, 8(1), 205–207. <https://doi.org/10.22271/yogic.2023.v8.i1c.1400>
- Li, W., Liu, Y., Deng, J., & Wang, T. (2024). Basketball specific agility: A narrative review of execution plans and implementation effects. *Medicine (United States)*, 103(6), E37124. <https://doi.org/10.1097/MD.00000000000037124>
- Porter, J. M., Anton, P. M., Wikoff, N. M., & Ostrowski, J. B. (2013). Instructing skilled athletes to focus their attention externally at greater distances enhances jumping performance. *Journal of Strength and Conditioning Research*, 27(8), 2073–2078. <https://doi.org/10.1519/JSC.0b013e31827e1521>
- RamiRez-Campillo, R., Andrade, D. C., & Izquierdo, M. (2013). Effects of plyometric training volume and training surface on explosive strength. *Journal of Strength and Conditioning Research*, 27(10), 2714–2722. <https://doi.org/10.1519/JSC.0b013e318280c9e9>

- Reiter, C. R., Killelea, C., Faherty, M. S., Zerega, R. J., Westwood, C., & Sell, T. C. (2023). Force-plate derived predictors of lateral jump performance in NCAA Division-I men's basketball players. *PLoS ONE*, 18(4), e0284883. <https://doi.org/10.1371/journal.pone.0284883>
- Singh, D., & Singh, S. (2013). Effects of vertical and horizontal plyometric exercises on running speed. *Human Movement*, 14(2), 144–147. <https://doi.org/10.2478/humo-2013-0017>
- Sulaiman, M., Raharjo, A., & Abidin, W. Z. (2018). *Effect of Plyometric Tuck Jumps and Lateral Hurdle Jumps on The Ability of TakrawrS Male Athletes to Do Smash Kedeng*. <https://doi.org/10.2991/isphe-18.2018.28>