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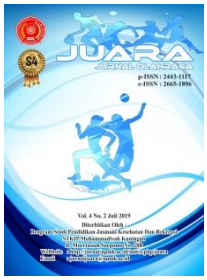

# *THE EFFECT OF PLYOMETRIC EXERCISES ON LAY-UP ABILITY IN BASKETBALL GAMES AT UNO BASKETBALL CLUB*

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**Abstract**

*This research aims to reveal the influence of Plyometric training on basketball lay-up ability with plyometric training. This research method is experimental research because this research requires treatment. The treatment is carried out on the independent variable and the results are seen on the dependent variable. The design used in this research is One Group Pretest Posttest Design. The exercise frequency used is 3 times a week. The length of training is 16 meetings over 5 weeks. The population in this study was the Basketball Uno Basketball club with a total of 35 people. The sampling technique uses purposive sampling, namely determining samples based on characteristics. The sample chosen was 15 players from the Basketball Uno Basketball club. From the results of data analysis, a sig value of 0.000 (sig < 0.05) was obtained, which shows that there is an influence of Plyometric training on the basketball lay-up ability of the Basketball Uno Basketball club, in other words that there is an influence of Plyometric training on basketball playing ability.*



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## INTRODUCTION

Sport is a form of planned and structured physical activity that involves repetitive body movements aimed at improving physical fitness (Ervan Yudhi Tri Atmoko, 2020). Exercise can be started from an early age to old age and can be done every day. If someone does exercise regularly, they will be able to increase their muscle mass, which can stimulate muscle cells to grow bigger and muscle cells to become active. Some types of sports that are often played are Football, Badminton, Volleyball and Basketball. Basketball is a sport that is competed nationally and is an achievement game. Basketball is a sport that is popular in Indonesia and is played by all levels of society. Basketball is a large ball game played in groups played by two teams, each consisting of five players per team. Basketball is played on a court with a flat and hard surface that is free from anything that gets in the way(Riskiyanto, Harani, & Pertiwi, 2018).

Basketball is a sport that requires mastering the basic techniques of catching, shooting, throwing and dribbling, a skill that must be mastered from an early age(Guimarães et al., 2021). The important role of this sport is the use of jumps when playing basketball. In general, basketball is played using three technical elements which are the main elements of the game(Malik & Rubiana, 2019). Therefore, the athlete's or athlete's ability is measured based on individual basic technical abilities that are trained regularly and teamwork. To get a quality game, enthusiasm alone is not enough, it needs to be supported by mastery of basic skills, one of which is basic skills such as Lay-Up. Lay-Ups have a big contribution to a team's victory. Even though this ability is important for athletes to have, researchers found that during competitions there were still some athletes who often made mistakes during lay-ups.

Lay-Up is a type of shot that is done as close as possible to the ring, preceded by a jump-step-jump(Putri, Kurniawan, & Wijaya, 2021). Therefore, muscle power is very necessary to get maximum Lay-Ups. One type of exercise that can increase leg muscle strength is plyometric training. Plyometric training is a Plyometric exercise which is a training method that functions to increase leg muscle power and agility, especially the leg muscles(Karo-Karo, Sari, & Dewi, 2022). There are several types of plyometric training methods that can be applied to train leg muscle power, but in this study researchers used plyometric training types(Factor & Dale, 2014). This research aims to see whether there is an influence of Plyometric Training on Basketball Lay-Up Ability at the Uno Basketball Club.

## METHODS

This research is experimental research because this research requires treatment. The treatment is carried out on the independent variable and the results are seen on the dependent variable. This research design uses a one group pre-test-posttest design (Shinta Nurtazali Putri & Nurul Afrianti, 2023). This research has two variables, namely the independent variable (X) and the dependent variable (Y). The independent variable referred to in this research is Plyometric Training. Meanwhile, the dependent variable is the ability to lay up in basketball. This research applies Plyometric training to just one group (sample) which is measured twice, the first measurement is carried out before the subject is given treatment (pretest), then the treatment (treatment), which finally closes with the second measurement (posttest). The exercise frequency used is 3 times a week. The length of training required is 16 meetings over 5 weeks.

The population in this study was the Basketball Uno Basketball club, totaling 35 athletes. The sample in this research was taken using purposive sampling, namely, a sampling technique with certain characteristics(Sugiyono, 2018) namely 15 male athletes from the Uno Basketball club.

The instrument used in this research was the Vertical Jump test. According to (Nafi & Aditya, 2004), Vertical jump is an explosive movement which is a combination of strength and speed, where every individual who wants to have maximum jump results must have leg strength and movement speed, so practice is needed. Data analysis techniques using normality test analysis and hypothesis testing.

## FINDINGS AND DISCUSSION

### Findings

This research is an experiment where the research is carried out using experiments, which is a quantitative method, used to determine the effect of the independent variable (treatment) on the dependent variable (outcome) under controlled conditions. Research data was obtained from the results of tests that were carried out using research instruments in the form of training programs. The following are the results of the description of the data analysis.

Tabel 1 Pretest and Posttest Scores for Male Uno Basketball Athletes

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| nilai pretest | 15 | 28.00 | 35.50 | 31.8333 | 2.76242 |
| nilai posttest | 15 | 29.00 | 37.00 | 33.7000 | 2.46258 |
| Valid N (listwise) | 15 | | | | |

Table 1 explains that the average score of the pretest is 31.833 and the posttest is 33.700. Both data increased after undergoing treatment.

Tabel 2 Uji Normalitas

**Tests of Normality**

| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| nilai pretest | .117 | 15 | .200* | .914 | 15 | .156 |
| nilai posttest | .234 | 15 | .026 | .916 | 15 | .167 |

Based on the normality test in this research, the normality test used is the Shapiro-Wilk test, with a significance level used of 0.05, so the data is normally distributed (Rini & Faisal, 2015). Based on the results of the normality test in table 2, in the Shapiro Wilk section it is known that the significant value for the pretest value is 0.156, and the post test value is 0.167. So it can be concluded that the pre-test and post-test value data are normally distributed. In this way, the requirements or assumptions of normality in using the paired sample t test have been fulfilled.

Tabel 3 Uji *Paired T-test*

**Paired Samples Test**

| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval Lower | Upper | t | df | Sig. (2-tailed |
|---|---|---|---|---|---|---|---|---|---|
| Pair | nilai pretest - nilai posttest | -1.867 | 1.274 | .329 | -2.572 | -1.161 | -5.673 | 14 | .000 |

Based on table 3 above, it is known that the Sig value. (2-tailed) is 0.000 < 0.05, so there is an influence of plyometric training on lay-up ability in basketball games at the Uno Basketball club. The output table above also contains information about the value of "Mean Paired Differences" which is -1.867. This value shows the difference between the average pretest results and the average posttest learning results or 31.83-33.70 = -1.867 and the difference is between -2.572 to -1.161 (95% Confidence Interval of the Difference Lower and Upper).

**Discussion**

In the game of basketball, lay up is a shot that must be mastered by every player, especially basketball players. Because the lay up is done from close range, the possibility of the ball entering the goal is very high. Even shooting from close range requires technique so that the ball doesn't miss. Performing the layup technique requires continuous technical practice so that you can direct the ball while applying it without following the rules or committing a foul. The lay up shot is an effective type of shot, because it is done at a distance as close as possible to the basketball hoop. The lay up shot is also a very useful shot for scoring points, because the chance of getting into the ring is quite large, namely 90%(Sungkawa & Harwanto, 2020). So this research aims to find out whether plyometric training in the form of Squat Jump, Rope Jump and Side Hop exercises has an influence on an athlete's lay-up ability.

Plyometric training is the use of weights with your own body weight (inner load) and has been used as a training method especially to develop strength, speed and power(Yusuf, 2018). According to(Dimas Fachrudin & Vera Septi Sistiasih, 2023), The principle of the plyometric training method is that the muscles always contract, both when lengthening (eccentric) and when shortening (concentric) to produce a large and explosive force quickly. There are several plyometric training models that are used to increase power abilities when doing vertical jumps, namely Squat Jump, Rope Jump, and Side Hop. As a result of analysis, research and data processing that has been carried out previously, it can be seen that the average score on the Plyometric Training test from the pretest score is 31,833 cm and the posttest is 33,700 cm. Referring to these results, it can be stated that there was an increase between the pretest and posttest. These results are strengthened by calculations using the paired t test. Where the significant value has an influence on the athlete's jumping power ability because the significant value is <0.05. The results of this research are also in line with research conducted by (Purnami & Purnomo, 2019)*;* with the title The Effect of Plyometric Training on Speed, Power and Agility Ability which says that plyometric training can increase power, namely 0.000 < 0.05.

The results obtained are supported by existing theory according to (Marpaung, Sari, & Ndayisenga, 2021); (Kurniawan & Ramadan, 2016), suggests that plyometric training is an activity that involves and utilizes the muscle stretch reflex mechanism to increase the efficiency of force production in a joint (muscles, bones and joints) or improve physical work performance. This can be explained by the fact that when athletes do plyometric training there is a significant increase in jumping ability, especially in lay ups. One training method to increase jumps when doing lay ups is plyometrics.

Plyometric training is a training method that can be used to improve students' ability and strength in jumping during lay ups. The movement patterns in plyometric training in this study are Squat Jump, Rope Jump, and Side Hop. Where this movement mostly involves the muscles of the lower limbs, because the movement of this muscle group is actually the center of power to be used in making jumps(Al Azip, Syamsuar, Syafruddin, & Masrun, 2023). Therefore, to improve your lay up ability, you need good and consistent jumping power by adjusting your training pattern using plyometric training methods. Then the scope of

problems in basketball, especially in laying up techniques, will be resolved properly.

## CONCLUSION

Based on data analysis and discussion from this research, the conclusion of this research is that there is an influence of plyometric training on basketball lay-up ability in terms of leg length at the Uno Basketball club.

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