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# The Effect of Front Cone Hops Exercise on Limb Muscle Power in Basketball Extracurricular

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***Abstract*— The purpose of this study was to determine whether there was the effect of front cone hops exercise on the limb muscle power of male students of Palembang State High School 1 extracurricular basketball. This research is experimental. The population in this study were all male basketball extracurricular students with a total sample of 30 people. The instrument used is a vertical jump, while the data analysis technique uses the sample normality statistical test, statistical test sample homogeneity, and t-test. The results of this study in the experimental group, front cone hops exercise had a significant effect on male students' leg muscle power. The results of the experimental group pretest obtained the highest Vertical Jump was 59 cm, and the lowest was 36 cm, and the average pretest of the experimental group was 48 cm. After being treated with front cone hops exercises, there was an increase of 6.33 cm, so that the average posttest of the experimental group was 54.33. The results of hypothesis testing using the t-test with a significant level of α = 0.05 and a confidence level of 95% = 1.70 obtained the value of t calculated at 9.75 to 9.75> 1.70. This research implies that Front Cone Hops exercises can affect the limb muscle power of students who take basketball extracurricular activities.**

***Keywords: basketball extracurricular, limb muscle power, front cone hops exercises***

## I. INTRODUCTION

Basketball is a team sport that uses a ball played by two teams consisting of five players who compete with each other. The basketball game aims to get as many points as possible into the opponent's basket. Basketball athletes usually have a high posture. But not a few basketball athletes who also have a short body posture. Basketball athletes who have a short body posture will be difficult when dealing with higher opponents, but these deficiencies can be covered with good leg muscle power. Therefore leg muscle power in basketball is needed to support basic basketball techniques.

The observation results at Senior High School Number 1 Palembang have a basketball extracurricular consisting of junior and senior teams. The junior team is the male students of class X and XI. Junior men's teams cannot enter the final round. One of the causes of the defeat of the men's team is that students are still not maximally jumping during jump shoots, under the basket shoots, and set shots. This is due to the lack of power in the leg muscles. Because of all this time, the form of exercise used only focused on the technique without the support of exercises to increase leg muscle power. [4] several physical components need to be considered to be developed, among them are cardiovascular endurance, endurance strength, muscle strength (flexibility), flexibility (flexibility), speed, stamina, agility (agility), muscle power (power), endurance strength (strength endurance).

Some physical components that need to be added to be developed. These components are cardiovascular endurance, endurance strength, muscle strength (intelligence), concentration (speed), speed, stamina, agility (agility), muscle strength, and endurance strength. [3]. Plyometrics training is one such training strategy to improve the performance of the basketball players as the training approximates their basic needs of agility and power [9]. Many forms of exercise that can be used to increase leg muscle power are bench jumps, squat jumps, squat thrusts, and front cone hops. This research uses front cone hops exercises. [10] states that front cone hops exercises have a significant effect on the leg muscle explosive power because the legs always perform continuous contractions going forward while doing the exercise.[8] the results of the paired sample t-test showed that the plyometric front cone hops training method showed a significant effect on the strength and power variables of leg muscles. [2] the results of his research, front cone hops exercises, have an impact on increasing leg muscle power in the male students of Extracurricular Participants Tae Kwon Do, which is obtained a percentage of 19.77.

Based on the existing problems, in this study, using front cone hops exercises to improve the leg muscle power of male basketball extracurricular students in-state, a coach had never done high school one and also this training.

## II. RESEARCH METHODS

The method used in this study is quasi-experimental (quasi-experimental research). The population of male students who take basketball extracurricular is 30 people, while the sample is 30 people. The research sample was ordinal pairing.

In carrying out this study, the test instrument used was the vertical jump test aimed at measuring how much leg muscle power ability was calculated using a meter. The statistical data analysis technique used is the t-test. The form of the test used in this study is the vertical jump ability test, where students are allowed three times to make a jump. The highest achievement is taken from one of the jumps minus the achievement without jumps.

## III. RESULTS AND DISCUSSION

### *A. Results*

Basketball extracurricular students carry out vertical jump tests during the pretest and post-test. The following are the vertical jump assessment criteria according to [7].

TABLE I. VERTICAL JUMP RATING SCORE FOR MAN

| No | Age | Interval | Category Value | Information |
|---|---|---|---|---|
| 1 | 16-19 Tahun | 73 above | 5 | Very Good |
| 2 | | 60-72 | 4 | Good |
| 3 | | 50-59 | 3 | Enough |
| 4 | | 39-49 | 2 | Less |
| 5 | | 0-38 | 1 | Very Lacking |

The results of the pretest and posttest conducted in the experimental group and the control group are as follows.

TABLE II. PRETEST AND POSTTEST RESULTS OF THE EXPERIMENT GROUP AND THE CONTROL GROUP

| No | Eksperimen Group Pretest (T) | Eksperimen Group Posttest (PT) | Different (X) (PT-T) | $X^2$ | No | Control Group Pretest (T) | Control Group Posttest (PT) | Different (Y) (PT-T) | $Y^2$ |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 59 | 66 | 7 | 49 | 1 | 58 | 60 | 2 | 4 |
| 2 | 58 | 64 | 6 | 36 | 2 | 58 | 58 | 0 | 0 |
| 3 | 57 | 60 | 3 | 9 | 3 | 56 | 57 | 1 | 1 |
| 4 | 54 | 62 | 8 | 64 | 4 | 54 | 55 | 1 | 1 |
| 5 | 54 | 59 | 5 | 25 | 5 | 53 | 55 | 2 | 4 |
| 6 | 50 | 60 | 10 | 100 | 6 | 51 | 51 | 0 | 0 |
| 7 | 49 | 54 | 5 | 25 | 7 | 49 | 49 | 0 | 0 |
| 8 | 47 | 56 | 9 | 81 | 8 | 48 | 48 | 0 | 0 |
| 9 | 47 | 56 | 9 | 81 | 9 | 47 | 49 | 2 | 4 |
| 10 | 47 | 52 | 5 | 25 | 10 | 47 | 47 | 0 | 0 |
| 11 | 45 | 50 | 5 | 25 | 11 | 46 | 48 | 2 | 4 |
| 12 | 43 | 50 | 7 | 49 | 12 | 42 | 44 | 2 | 4 |
| 13 | 39 | 45 | 6 | 36 | 13 | 40 | 42 | 2 | 4 |
| 14 | 39 | 42 | 3 | 9 | 14 | 38 | 42 | 4 | 16 |
| 15 | 36 | 43 | 7 | 49 | 15 | 36 | 39 | 3 | 9 |
| ∑ | | | **97** | **663** | ∑ | | | **21** | **51** |

Based on the result get:

$X^2 = 663$

$Y^2 = 51$

$$Mx = \frac{\sum X}{N} = 6,47 \quad (1)$$

$$My = \frac{\sum Y}{N} = 1,4 \quad (2)$$

$$\sum x^2 = \sum X^2 - \frac{(\sum X)^2}{N} = 35,74 \quad (3)$$

$$\sum y^2 = \sum Y^2 - \frac{(\sum Y)^2}{N} = 21,6 \quad (4)$$

$$t = \frac{Mx - My}{\sqrt{\left(\frac{\sum x^2 + \sum y^2}{Nx + Ny - 2}\right)\left(\frac{1}{Nx} + \frac{1}{Ny}\right)}} = 9,75 \quad (5)$$

so $t_{table}$ dk = 28 with a 95% confidence level = 1.70

With the price $t_o$ = 9.75 and consulted with $t_{0,95}$ = 1.70, it turns out that too is greater than the value of $t_o$ in the distribution table that is 9.75> 1.70 (there is a significant difference between the experimental and control groups).

Then the hypothesis that reads, "There is the Effect of Front Cone Hops Exercise on the Leg Muscle Power of Extracurricular Basket Ball Male Students in Senior high school number 1 Palembang High ", can be accepted.

### *B. Discussion*

Power is a combination of strength and speed or mobilization maximum muscle force with maximum speed [5]. Power is the ability to move, blow up maximum power in the shortest possible time. Leg muscle power is the ability of a group of leg muscles to make explosive movements while jumping [1]. Exercises that are used to increase leg muscle power are using front cone hops (jumping kun) exercises. This research has been conducted on male students extracurricular basketball High School Number 1 Palembang totaling 30

students. All samples do a pretest, then the results are ranked from highest to lowest. The sample was divided into 2 groups using the ordinal pairing system based on the results of the pretest ranking of 15 students as the experimental group and 15 again as the control group. The control group was not treated while the experimental group was treated in the form of front cone hops exercises (jumping over kun) for 6 weeks with a frequency of exercise 3 times a week. After 6 weeks of practice, a final test (posttest) was conducted.

The results of the pretest of the experimental group found that the extracurricular basketball students of Senior High School Number 1 Palembang Vertical Jump were the highest 59 cm and the lowest was 36 cm and the average pretest of the experimental group was 48 cm. After being treated with front cone hops exercise for 6 weeks with a frequency of exercise 3 times a week there was an increase of 6.33 cm, so that the average posttest of the experimental group was 54.33. The highest pretest results of the vertical jump control group were 58 cm and the lowest was 36 cm and the average pretest control group was 48.6. After the learning process carried out 18 times the meeting turned out to be an increase of 0.73 cm, so that the average posttest of the control group was 49.33 cm.

The results of the pretest data were obtained, then data were processed using normality and homogeneity tests as a condition of data analysis. After testing it turns out that the pretest data is normally distributed and homogeneous. Data is stated as normal and homogeneous distribution, then the hypothesis can be submitted using the statistical "t test". Hypothesis testing criteria accept Ho if tcount <ttable (1-α) and reject Ho if tcount > ttable (1-α), where t (1-α) is t obtained from the abel t distribution with dk = n1 + n2-2 and opportunities (1- α). Obtained tcount = 9.75 while t0,95 = 1.70 so tcount = 9.75> t0,95 = 1.70 thus front cone hops exercises significantly influence the leg muscle power of male students in extracurricular basketball ini senior high school number 1 Palembang.

[6] in their journals have shown that with a training devoted to increasing power, when using plyometric training contributes to improved vertical jump performance by increasing speed, strength and power together with awareness of motion. [11] Based on the test results above it is known that the experimental group 1 with a form of Front Cone Hops training is more effective in increasing leg muscle strength.

## IV. CONCLUSION

Based on data analysis and research results, it can be concluded that Front cone hops exercises have a significant effect on the leg muscle power of extracurricular men's basketball students at Senior High School number 1 Palembang. Front cone hops exercises can increase leg muscle power of male students in extracurricular basketball, this can be seen from the increase in pretest and posttest of the experimental group from 48 cm to 54.33 or an increase of 6, 33cm while the average pretest and posttest control group from 48.6 to 49.33 or an increase of 0.73. The results of the study indicate that front cone hops exercises can be used as a training method to increase leg muscle power for basketball.

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