
Reactive Jump Effect on the Muscle Power of the Educational Center and Exercise of Riau 2018 Dispora Volleyball Student

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Abstract: Sports is an effort to maintain a healthy body and is able to improve the function of body organs that are accustomed to exercising. There are many advantages when someone carries out sports activities, besides physical aspects, but also related to social aspects such as adding friends by participating in community sports activities, acknowledging the existence of other people with their willingness to share with their sports friends. The purpose of this study was to find out: the effect of Reactive Jump on the power of athlete's leg muscle in the Education and Training Centre of Riau Dispora Volleyball 2018. This type of research was experimental research. The analysis of the t-test yields T_{count} of 6,764 and T_{table} of 1,753. Means $T_{count} > T_{table}$. Based on the t-test after calculating the basis, there is a difference in numbers that increases or rises by 5.01. It can be concluded that Reactive Jump exercises affect the Power of Leg Muscles in PPLP Athletes in Riau Province. Based on the findings and processing of the data above, it can be concluded the following: There is the effect of Reactive Jump (X) exercises with Leg Muscle Power (Y) on PPLP Athletes in Riau Province.

Keywords: Reactive Jump, Power Muscle Legs

1. Introduction

Sport is an effort to maintain a healthy body and is able to improve the function of body organs that are accustomed to exercising. There are many advantages when someone carries out sports activities besides physical aspects but also related to social aspects such as adding friends by participating in community sports activities, acknowledging the existence of other people with their willingness to share with their sports friends.

In addition, sports can foster character, personality, discipline, sportsmanship and thinking abilities and achievement development. According to EngkosKosasih (1993: 3) sports are physical activities contained in games, competitions, and intensive physical activities in order to obtain recreation, victory and optimal achievement. Broadly, the sport consists of Athletics, gymnastics, swimming, soccer, volleyball, badminton, martial arts and others. The problem of increasing achievement in the field of sports as a target to be achieved in coaching and development in Indonesia will take a long time. There are four kinds of completeness that must be possessed if someone will achieve a maximum achievement, namely: 1. Physical build-up, 2. Technical build-up, 3. Mental build-up, 4. The maturity of champions (M. Sajoto, 1995: 7).

One of the sports branches that need to be improved is the volleyball branch. Volleyball games are a type of team sports that use large balls, require a certain size field, and are played in groups (teams). Volleyball games when played by players are very visible once the player performs motion activities that require speed and strength, for example when smashing a ball, it

requires strength when smashing the ball hard, requires a strong body resistance when playing in quite a long time, and requires power in the leg muscles when jumping to smash the ball (Faruq, 2008: 20-21).

In an effort to preserve the culture must be instilled early, one of them is by introducing and teaching martial arts through education in schools, both in physical education learning and extracurricular activities. PencakSilat is a part of the physical education curriculum that must be taught to students as well as the beginning to prepare children to become future athletes who will be accommodated in a programmable achievement coaching through concentration of regional training for students, namely the Student Sports Training and Development Center (PPLP) branch sports PencakSilat. "PPLP or the Student Sports Training and Training Center is a National sports nursery school that is used to search for and foster sports talent at school age" (Ministry of Youth and Sports, 2011, p. 19). In realizing competitive sports, a nursery, coaching, education, training, and sports achievements are needed continuously from an early age, so that the desired achievement can be achieved. Through PPLP, prepared junior sportsmen who are physically and mentally able to replace or continue the struggle of senior sportsmen. Every year a National Championship between PPLP is held, organized by the Ministry of Youth and Sports. The aim of the National championship between PPLP is to culminate in the formation of student sports achievements and evaluation of various forms of PPLP coaching.

The factors that influence sports performance are:

1. Internal factors

Factors derived from the potential that exists in athletes or in people who practice, meaning that sports performance is influenced and determined by the ability of the athlete itself as a whole both regarding the ability of PHYSICAL, TACTICAL, ENGINEERING or MENTAL.

2. External factors

Factors that can affect the performance of athletes who come from outside the athlete. Example: infrastructure, trainer.

These factors are very influential on the achievement of an athlete because basically an athlete who will compete has the best preparation in terms of both physical and mental aspects. This is in line with the opinion of Husdarta (2014, p. 94), namely "Individual involvement in sports/achievement activities that are contested, in which there are efforts to mobilize the highest physical and psychological abilities in spurring and pursuing the highest achievement". As expressed by Harsono (1988, p. 100) explains as follows:

The main objectives of training are to help athletes in improving their skills and achievements to the fullest. To achieve this, there are four aspects of training that need careful attention and training by athletes, namely (1) physical exercise, (2) technical training (3) tactic training and (4) mental training.

Physical conditions are a complete unity of components that cannot be separated just like both improvement and maintenance. Among these physical conditions are: strength (strength), endurance (muscular power), speed (speed), flexibility (flexibility), agility (coordination), coordination (balance), accuracy (accuracy) and reaction (reaction) (Sajoto, 1995: 8-9).

Given that volleyball is a type of sport that relies heavily on physical, the physical condition of the player is very important in supporting game activities. Physical conditions greatly affect optimal achievement. Physical conditions are a complete unity of components that cannot be separated, both their enhancement and their maintenance. Physical condition components include: Agility, Balance, Strength, Coordinating, Endurance, Flexibility and the speed of reaction.

One of the basic factors that affect an athlete's ability in a volleyball branch is the power or explosive power of the leg muscles. Power is a person's ability to use the maximum power that is deployed in the shortest time. Power is the result of strength and speed. The power of the leg muscles is used to release the maximum strength that rests on the legs. The power of leg muscles in volleyball games is needed when doing smash and block. For that reason, if the leg muscle power is not good, then it can be ascertained that the jump made is not high and the smash or block cannot be done optimally.

The training that can be given to increase Explosive power according to Bompa (1994: 77), among others, are as follows: a). Single leg Take-off exercise, b) Double leg take-off, c) Reactive Jump, d) Upper Body Exercise, e) Relays and Simple Games. The reason for using reactive jump is because of this reactive jump exercises when viewed from the motion characteristics and implementation in the Volleyball Block and Smash game has suitability, therefore the authors are interested in providing Reactive Jump exercises.

Student sports education and training center (PPLP) as a forum for education and training of gifted student-athletes is a form of training implementation system to reach outstanding athletes. The formation of the Student Sports Education and Training Centre aims to have potential and outstanding student-athletes able to be fostered centrally so that the training process for athletes will be more intensive and the development of academic education is not left behind. One of the provinces that are currently conducting training for its students to further improve sports achievements is Riau Province. Centre for Student Education and Training of Riau Province is a forum for athlete coaching at the student level placed in Pekanbaru.

The main reason why coaching must be sustainable, this is because coaching and participation activities that are cut off or back and forth in the coaching process will not result in progress in achievement. Furthermore, through a sustainable program and continuing, the process of coaching like this makes the basis for training to succeed. Student-athletes at the Student Sports Education and Training Centre who carry out physical training exercises still lack the use of modern burden tools. Student athletes at the Student Sports Education and Training Centre are still given a lot of modified exercises. The formation of the Student Sports Education and Training Centre is one place in an effort to improve the quality of engineering as well as the physical condition of athletes who are planned continuously. Physical exercise that is carried out regularly, systematically and continuously, and is outlined in an exercise program will significantly improve physical abilities. Physical training is a conscious and programmed effort to foster the basic functional qualities of athletes to a higher level, so as to achieve optimal performance. Components of basic physical conditions consist of: strength, speed, explosive power, flexibility, agility, balance, endurance, reaction, accuracy, coordination. It was further explained that physical conditions are closely related to an athlete's ability to achieve performance. (Center for the Study and Development of Sports Science and Technology, 1999: 5).

The process of training physical conditions that are done carefully, repeatedly with increasing training load allows one's physical freshness to become more skilled, strong and efficient in its movements. Lutan, et al (1991: 111) said that: "an athlete who follows an intensive physical exercise program for 6-8 weeks before the season will have much better strength, flexibility and endurance during the season." component development of the best physical condition also helps an athlete to be able to follow the next training in an effort to achieve the highest achievement. However, in the case of the training carried out by the trainer before the match day, it still shows the obstacles so that coaching from the physical aspect is not optimal. Even this physical

condition factor doesn't seem to get more attention. This is one of the causes so that achievements have not shown good results in accordance with what is expected. The trainer has not implemented the actual training method optimally, or in the sense that the training system needs to be improved, not maintaining what has been done so that the results to be achieved cannot be achieved. At first, to be accepted as a student athlete at the Student Sports Education and Training Centre was not easy. Because it requires a process in recruitment using a variety of benchmarks, so that prospective athlete who enter and are accepted as student-athletes at the Student Sports Education and Training Centre are truly produced from a tight competitor level, rigorous selection and obtained through planned competition, regular and sustainable.

2. Methodology

The type of this research is experimental research. Experimental research is an experimental study and uses analysis with the help of statistics to test hypotheses. The research carried out approached the actual experiment (Sugiyono, 2005: 93). There were two variables found in this study, namely Reactive Jump exercise was as an independent variable, while Explosive Power Muscle Legs was as the dependent variable.

The population of this research was the whole subject of the study (Arikunto, 2002: 108) and in this study, the population was all PPLP Volleyball Balls in Riau Province consisting of 9 athletes. The sampling technique used a total sampling technique. The technique determined sample if all members of the population are used as a sample, if many populations are below 100 (Arikunto, 2012: 126), so in this study, the sample size was 9 athletes.

The desired data in this study was conducted two tests, namely the initial test (pre-test) before doing Reactive Jump and final tests (post-test) after doing Reactive Jump exercises for 16 meetings with three times a week.

1. Data requirements test was done by a normality test. This test was used because the study is only one sample group. Test normality was using the Lilliefors test.
2. The statistical hypothesis tested in this study was using the t-test formula as follows, (Sudjana, 2001: 227):

$$t = \frac{\bar{d}}{sd/\sqrt{n}}$$

\bar{d} = Average
 sd = Standard Deviation
 n = Sample

The decision was made at a significant level of $\alpha = 0.05$.

H_a accepted If $t_{count} > t_{table}$, it means that there is a significant effect of Reactive Jump training on leg muscle power in PPLP athletes in Riau Province. H_o accepted If $t_{count} < t_{table}$, it means there is no effect of Reactive Jump training on leg muscle power in PPLP Athlete in Riau Province.

3. Result and Discussion

1. Pre-test Vertical Power Jump Test Results Data

Before Reactive Jump training was carried out, a Pre-Test Vertical power jump test was performed. The pre-test was obtained for the Power Jump Test Vertical Test as follows: The highest score is 11.01, the lowest score is 10.91 with an average of 11.5967, and a standard deviation of 0.36455. Vertical Pre-Test Analysis Data power jump test can be seen in the following table:

Table 1 Vertical Power Jump Test Pre-test Data Analysis

Statistic	Pre-test
Sample	9
Mean	11.5967
Standard deviation	0,364
Minimum	10.91
Maximum	13,01
Sum	164,03

Based on the frequency distribution table above, out of 9 samples, 0 people (0%) is with interval ranges from 9.31 to 9.81, 0 people (0%) ranges with intervals of 9.82 to 10.32, 3 people (35 %) ranges with intervals of 10.33-10.83, 3 people (35%) is with a range of intervals of 10.84 to 11.34, and 3 people (35%) is with an interval of 11.35 to 11.85. For more details, it can be seen in the histogram below:

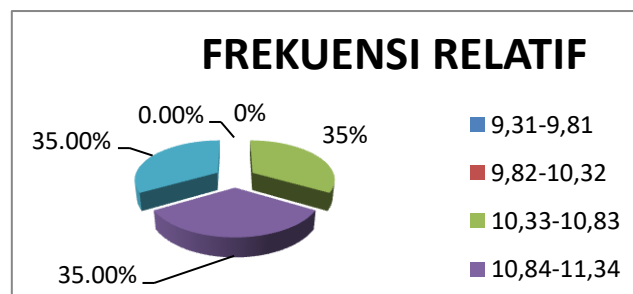


Figure 1. Histogram Data for the result of Pre-Test Vertical Power Jump Test

2. Vertical power jump test post-test results data

After doing Vertical Power Jump Test, and after applying the Reactive Jump exercise treatment, the final (Post-test) Vertical Power Jump Test is obtained as follows: the highest value is 14.12, the lowest value is 12.11, with an average of 13.0722, and standard deviation of 0.79082. The analysis of the results for the post-test Vertical Power Jump Test can be seen in the table as follows:

Table 2. Data analysis for Post-Test of Vertical Power Jump Test

STATISTIC	Post-Test
Sample	9
Mean	13.0722
Standard Deviation	.79082
Minimum	9,43
Maximum	12.11

Based on the frequency distribution table above, out of 9 samples, as many as 0 people (0%) is with a range of intervals of 9.43-9.93, 0 people (0%) is with a range of intervals of 9.94-10.44, 0 people (0%) ranges with intervals of 10.45-10.95, 0 people (0%) ranges with intervals of 10.96 - 11.46, 5 people (55.55%) is with a range of intervals of 11.47 to 11.97, and 4 people (44.44%) ranges with intervals of 11.98 - 15. For more details, see the histogram below:

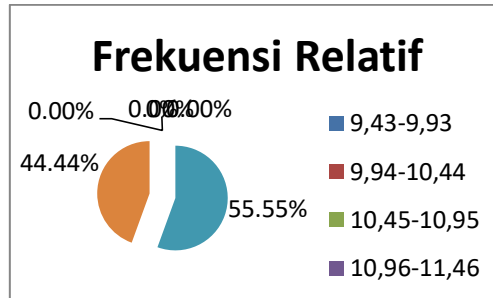


Figure 2. Histogram Data for Vertical Power Jump Test Post Test Results

The data obtained were analyzed using the t-test, and then the testing of the research hypotheses that have been submitted in accordance with the problem is: "there is a significant effect of Reactive Jump (X) training with Leg Muscle Power (Y). Based on the t test, the analysis produced t_{count} is 6,764 and t_{table} is 1,753. It means $t_{count} > t_{table}$. It can be concluded that H_a is accepted. The hypothesis tested in this study are: H_1 : There is a significant effect between Reactive Jump (X) Exercise on Leg Muscle Power (Y) on PPLP Athletes in Riau Province.

It can be concluded that there is a significant effect between Reactive Jump (X) Exercise on Leg Muscle Power (Y) on PPLP Athletes in Riau Province at the level of α (alpha) 0.05 with a 95% confidence level.

4. Conclusion

The data obtained in the study were quality through tests before and after giving Reactive Jump training treatment for 16 meetings. The data was taken through tests and measurements of 9 PPLP athletes in Riau Province. Based on the analysis of the t test, it yields T_{count} of 6,764 and T_{table} of 1,753. It means $T_{count} > T_{table}$. Based on the t test after calculating the basis, there is a difference in numbers that increases or rises by 5.01. It can be concluded that Reactive Jump exercises affect the Power of Leg Muscles in PPLP Athletes in Riau Province.

Based on the findings and processing of the data above, it can be concluded as follows: There are the effects of Reactive Jump (X) exercises with Leg Muscle Power (Y) on PPLP Athletes in Riau Province.

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