

Effect of Plyometric Training Front Cone Hops and Knee Tuck Jump on Improvement Muscle Explosion Power

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Abstract - This research aims to know the influence of exercise of plyometric front cone hops and knee tuck jump towards to increase the explosive muscle power limbs (study on male students of extracurricular in SMAN 13 Banjarmasin). The research method was used is a method of pre-experiment design. The technique of collecting data was done through pre-test, giving treatment as much as sixteen meetings and post-test. The population in this study were students who participated in extracurricular activities at SMAN 13 Banjarmasin, amounting to 30 people. The sample in this study were male students who participated in extracurricular activities totaling 30 people with a total sampling technique. The instrument uses a standing broad jump test and data analysis by t-test. Based in the result were analyzed and theoretical overview it can be concluded: there is influence of exercise of plyometric front cone hops and knee tuck jump towards to increase the limbs muscle explosive power (study on male students of extracurricular in SMAN 13 Banjarmasin).

Keywords: *plyometric, front cone hops, knee tuck jump, limbs muscle explosive power*

I. INTRODUCTION

Methodology Plyometric training is an exercise used to increase leg muscle explosive power. Training to increase leg muscle power is very much needed by futsal players. A good leg muscle explosive ability will produce a hard kick to create a goal.

Based on the observations of researchers at the Futsal championship competition between high school level schools held in Upik Futsal field in 2015, the Futsal Player of SMA Negeri 13 did not give the desired results, the ability to explode the leg muscles of the players is still less than the maximum, seen during passing, dribbling, and shooting the players have not shown that they have good explosive or power, not directional passing, not too hard shooting, and slow dribbling.

Sports and Health Physical Education Learning in schools has the aim to improve one's physical condition, the components that need to be developed Learning Physical Education and Sports has not been able to improve one of the physical conditions, namely the element of explosive power caused by several factors including the absence of appropriate treatment in increasing explosive power. The lack of time to learn Physical Education Sports and Health in schools that still use the curriculum KTSP 2 x 45 minutes a week one time. The ability of the teacher to provide teaching materials about

increasing explosive power has never been seen. In addition, internal factors such as student interest and motivation that are still low also have a great influence.

As is well known that plyometric training is a training technique used for all types of sports to increase explosive power in a short time. Plyometrics is defined as exercises that enable a muscle to reach maximum strength in as short a time as possible [1]. The principle of the plyometric training method is that the condition of the muscles always contracted both when elongated (eccentric) and shortened (concentric). Thus to obtain an increase in explosive power can be done with front cone hops and knee tuck jump exercises. If this research is not done immediately, then information about increasing explosive power will never be known.

As a solution to answer these problems, the effect of front cone hops and knee tuck jump exercises on explosive power needs to be examined immediately through an experimental study. The main objective is to find out and compare the effect of two forms of treatment on the increase in explosive power. The sample criteria that will be used are students participating in extracurricular activities at school.

II. METHODS

This type of research is a quantitative study using a quasi-experimental method. The design of this study uses one group pretest-posttest design, namely pairing one subject with another based on certain variables. The above research design can be explained as follows. 1) The division of groups in this study was carried out after all samples had pre-tested. Each sample will be ranked starting from samples that have high pre-test results and samples that have low pre-test results. 2) After being done, the distribution of experimental groups using the ordinal pairing sample method in order to obtain an arrangement based on levels in certain attributes. The population in this study were students who participated in extracurricular activities at SMAN 13 Banjarmasin, amounting to 30 people. The sample in this study were male students who participated in extracurricular activities totaling 30 people with total sampling technique. The instrument uses a standing broad jump test, and data analysis by t-test.

III. RESULTS AND DISCUSSION

Based on the results of the study showed that the practice of plyometric knee tuck jump and front cone hops, both of them influence the explosive power of the limb muscles of SMAN 13 Banjarmasin students.

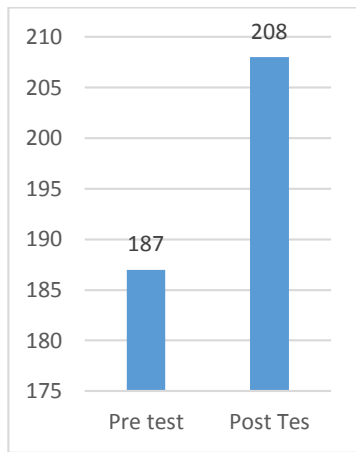


Fig. 1. Pretest and post-test

Seeing the results of data processing in this study, knee tuck jump and front cone hops exercises are very good in increasing test scores if during the initial test, the test scores are still low. However, cumulatively the front cone hops exercises are better than knee tuck jump exercises in improving test score results.

The increase in this exercise occurs because of the principle of repetition and the principle of increasing load which means that the muscles can increase in strength must be given a workload above the workload normally performed by the muscle. Then after the muscle becomes stronger the burden given must be even higher to produce more improved abilities. By implementing an exercise program that pays attention to this principle, the muscles will always get stimuli that allow them to change, or in other words experience the adaptation of the exercise.

In increasing the maximum ability according to Sidiq (2019) there are two ways, the first is to add muscle dimension (Hypertropie), where this method makes the diameter of the muscle become larger, the second is to improve cooperation between muscle groups, also called intramuscular coordination (KI) or commonly called the Neural Activation (NAM) method, in this study the Neural Activation (NAM) method is used.

In implementing treatment, it is necessary to apply interval training. Interval Training is an exercise program consisting of repetition periods of work interspersed with periods of rest [2], During the loading or training phase, skeletal muscle shows a great ability to change or plasticity in response to various forms of training. Skeletal muscle has its characteristic that looks like thousands of fibers that continue to form muscle tissue. The fibers regularly appear to be aligned like a neatly arranged file [3].

Knee tuck jump is an exercise that starts with the Quarter-Squad position, then jumps up quickly and repeatedly. This activity is a combination of eccentric contractions followed immediately by skeletal muscle concentric contractions.

Front cone hops are an exercise to jump over obstacles in the form of a cone with two legs strong and fast. In this movement, eccentric movements occur when the muscles begin to elongate, and the muscles are given a sudden load and forced to stretch before concentric contractions occur and produce movements that move from one place to another.

The knee tuck jump and front cone hops exercises are held 16 times, which are held 3 times a week every Tuesday, Thursday, and Sunday. Every child has their own measurements according to the basis of maximum tests and training programs.

Individual principles play an important role in determining the making of an exercise program; each child has a different dose at each exercise depending on when they do the maximum test because the maximum test is the key to making exercise programs.

Players who have lower maximum test scores are certainly different from players who have high maximum tests. The training starts from 5 sets to the highest of 9 sets, with an intensity of 30-50% [4].

To increase leg muscle explosive power it is very important for researchers to pay attention to the energy system used. The basic principle in the training program is to know the main energy system used to carry out an activity[5]. The energy system used is anaerobic which means without using oxygen, in other words the activity carried out is less than or equal to 90 seconds.

Comparing the two exercises used cumulatively front cone hops is better than knee tuck jump. Analysis of the movements carried out by the front hops cone movement requires more power because it requires power to jump up and forward, while the knee tuck jump movement is done with a maximum jump in the vertical direction only. And also the front cone hops practice is more directed to the standing broad jump test movement with the forward jumping motion.

Forms of plyometric knee tuck jump and front cone hops are very well used to increase leg muscle explosive power, this is in accordance with research conducted where the influence of knee tuck jump and barrier hops exercises on the results of distant ball kicks, a better effect on kick distance can be determined by comparing the two meanings of the group [6].

IV. CONCLUSION

The conclusion of research are: 1) There is an effect of front cone hops training on the increase in leg muscle power in male students who take extracurricular activities at SMAN 13 Banjarmasin. 2) There is an effect of knee tuck jump training on the increase in leg muscle power in male students who take extracurricular activities at SMAN 13 Banjarmasin. 3) Front cone hops exercises are better than knee tuck jump exercises to increase leg muscle explosive power in male students who take extracurricular activities at SMAN 13 Banjarmasin.

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