

The Effect of Horizontal Swings Training on Discus Throwing Ability

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Abstract. The Effect of Horizontal Swings Training on Discus Throwing Ability. The purpose of the research was to determine the effect of horizontal swings training toward discus throwing ability. The population of the research are all the students of physical education health and recreation halu oleo university amunted 226 people taken by 70 students. Then selected based on control variable. Firtly selected on gender at 43 people of male, then selected by horizontal swings ability and getting 34 people. Then 34 students by random to be sample of 20 people. The results of data analysis by using t-test statistical techniques at significant level of 0,05. The research can be concluded that "there is an effect of horizontal swings training toward discus trowing ability, where $t_{count} = 6,837 > t_{tabel} = 2,093$ at the experiment group.

1. Introduction

Discus is one of the oldest and most popular athletic branches in the world, including in Indonesia. This athletic branch has long been known to the public both in the urban community and in remote rural areas. In improving the performance of discus throwing sports, each athlete must prepare himself for both physical and throwing techniques. The techniques include prefix techniques, throwing techniques and advanced movement techniques after throwing. One technique that is quite important in throwing discus is the technique of throwing. Horizontal swings are a form of plyometric training, in which the emphasis is on increasing muscle strength and explosive power, especially on the muscles of the arms, shoulders and back. Actually there are many training methods that can be used to increase the strength of the muscles in question, for example by practicing medicine ball-pick-up balls or training with dumbbells. Horizontal swings are intended as a form of training to swing the load in the form of dumbbells with both hands starting from the front position then the dumbbell is swung horizontally with the body position in the direction of the left and right side repeatedly. Horizontal swings have similarities to the movement of disc throwing training, wherein throwing movement discus is done by swinging from the side towards the front. The muscles used in horizontal swings are also the muscles used in throwing discus. If horizontal swings are carried out seriously and in accordance with the principles of training, it can increase the strength of the muscles of the arms, back, chest and shoulders. Strengthening the muscles that are intended to support the ability to throw discus, especially other sports that require the strength of the arm muscles. Elements of physical ability in

performance sports are things that need to be prioritized by a coach to be able to improve the performance of his athletes.

2. Literature Review

2.1 *Understanding Horizontal Swings Training*

States that horizontal swings are a form of plyometric training that can be used to increase the explosive power of the muscles of the arms, shoulders and back [1]. According to [2] training is "the whole systematic preparation process for athletes to achieve high achievement". According to [3] training is a process of perfecting the ability to training which contains material, theory and practice, using methods, and rules, so that goals can be achieved in time. Horizontal swings are intended according to [1] as follows: 1) Initial attitude: standing position of kangkang with both hands holding dumbbells, both hands holding dumbbells are brought to the front of the body parallel to the shoulders, 2) Then dumbbells are swinging vertically starting from the front to the left side then back in its original position and then swung towards the right side and then back to its original position, 3) Movement carried out repeatedly, 4) With respect to the dumbbells used in horizontal swings training then the intended dumbbell weight refers in heavy dumbbell loads for beginner athletes it is 6-7 pounds or 2.7-3 kg [1].

2.2 *Nature of Training*

Training is a process that is carried out regularly in order to achieve the stated goals. The main goal of training in sports achievement is to develop the highest biomotoric capabilities to standard, or in the physiological sense the athlete tries to achieve the goal of improving the organism's system and its function to optimize the performance or appearance of the sport. Training according to [4] states, "Training a systematic and continuous process of practice or work that is done repeatedly continuously with increasing days increasing the amount of training load to achieve the goal". According to [5] that, "Training is a systematic process of repetitive practice, with more and more days increasing the amount of training load and intensity of training". According to [5] that, "Training is a systematic process of repetitive practice, with more and more days increasing the amount of training load and intensity of training".

2.3 *Understanding of Throwing Discus*

Throwing is a sport with throws (javelin, bullets, hammer, discus [6]. While discus are wooden objects in the form of iron belt framed plates [7]. So throwing discus is one of the race numbers. in athletics that uses a wooden object in the form of an iron-belted plate, or other flat round material thrown. Discus throws are also one of the athletic competitions which can cause danger in professional-level athletic competitions, athletes are able to throw discus very far, of course this can have fatal consequences if the disc hits someone. For this reason, a special fence is needed around the disc throwing field. The fence in the form of a net is installed with a height of 4m. in terms of shape and size, actually the disc throwing pitch is exactly the same as the hammer throw pitch.

2.4 *Physical Elements to Supporting Discus Throwing Sports*

2.4.1 Strength. Strength is the ability of the muscles to work to hold the load to the maximum. In addition, strength is the main determinant in the achievement of sports achievements and other elements are a support in the process of forming strength. Whereas [8] states that strength as a force or strain of a muscle or a group of muscles that can perform maximum resistance.

2.4.2 Explosive Power. Throwing very quickly and with maximum strength and in a very short time, it is necessary to have maximum explosive power in the muscles. Stated in his book that explosive power (power) is the body's ability to allow muscles or a group of muscles to work explosively [9]. Explosive means having explosive power. Likewise with [10], stating explosive power is related to the

rate at which someone does an activity, or explosive power is the result of x accelerating power. The opinion above can be said that explosive power is the ability of muscles to make movements that are fast, short and have a large explosive power so as to produce maximum movement.

2.4.3 Flexibility. Flexibility is the maximum ability of an inventory, [10]. In the athletic branch of flexibility the role is so large. This is in accordance with the statement of [11] that flexibility is good for quality and the beauty of motion, helps increase agility, speed, coordination, motion and power with a smooth motion treatment.

2.4.4 Coordination. Make perfect moves, coordination must be good especially in throwing discus. According to [10] states that coordination is the ability to use the five senses such as vision and hearing, together with certain bodies in carrying out motor activities with harmony and high accuracy.

2.4.5 Balance. Balance is the body's ability to maintain position in one desired point. Biomechanical balance is strongly influenced by the extent of the fulcrum, the height of the body's center, and the coefficient of friction between the body and the body. But on the other hand it is also influenced by the performance of the nervous system and the five senses. The type of balance is static and dynamic balance.

2.4.6 Accuracy. Accuracy is the ability to control free movements of a target. It can be a direct object or object that must be subject to one part of the body [12]. The accuracy referred to here is the throwing front in throwing so that the disc does not cross the edge of the field.

2.5 Data Collection Technique

Obtaining data on disc throwing capabilities, the research procedure was carried out as follows: The sample testees were first trained specifically in order to know how to throw the discus properly and correctly, everyone who would do the test, be warmed up, explain the technique of the test, call one by one testee to do the test (throwing discus), testee throws by way of the throwing direction, each testee tries to be given the chance to do 2 throws, data is recorded based on the farthest distance of throws from two occasions which are measured using meters.

2.6 Data Analysis Technique

The data collected will be presented quantitatively as follows: Descriptive analysis to determine the average achieved by each observed variable. The standard deviation to find out the size of the deviation of the score from the average number. Pre-test, post-test homogeneity test as a prerequisite test. Testing the hypothesis with statistical tests (t-test) [13]; [14].

3. Results and Discussions

This study was intended to determine the effect of horizontal swings on the ability to throw discus. In the implementation of this study by using a Randomized Pre-test Post-Test One Group Design. In this design, it shows that the sample was taken randomly, which means that of all the populations that have all the same opportunities to be the research sample. The pre-test was intended to determine the subject's initial ability before being given treatment, while the post-test was intended to determine the subject's ability after being given treatment. The samples used in this study were 20 students who were selected based on consideration of control variables and random sampling. The implementation of the treatment with the form of horizontal swings training aims to increase the explosive power of the muscles of the arms, shoulders and back so that we can find out whether there is a difference between the pre-test and post-test after being treated with horizontal swings. Based on the results of the t-test and post-test showed that there was the effect of horizontal swings on the ability to throw discus where $t = 6.837 > t_{table} (19:0.05) = 2.093$. These results indicate that the pre-test and post-test experience

increased ability to throw discus. Increased ability to throw discus is a result of horizontal swings training program that strengthens the explosive power of the muscles of the arms, shoulders and back. Horizontal swings training requires the movement of all the muscles of the arms, shoulders and back so that the treatment of these muscles is carried out in accordance with the principles of training contained in an training program that can improve the ability of people to throw.

4. Conclusion

Based on the results of the research mentioned above, it can be seen that there is an effect of horizontal swings training ability at the students in halu oleo university on discus throwing. After received of horizontal swings training treatment, the results of discus throwing between the initial test and the final test have increased and have been tested statistically and yielded $t_{count} = 6.837$. With a level of confidence = 0.05%, $dk = (n-1) = 20-1 = 19$ obtained a price of 2.093, thus $t_{count} > t_{table}$ ($t_{count} = 6.837 > t_{table} = 2.093$). Based on the testing criteria that: if $t_{count} > t_{table}$ at $\alpha = 0.05$ $dk = 19$, it can be stated that there is an effect of horizontal swings training ability on throw discus at the students in kendari halu oleo university.

References

- [1] Radcliffe, J 1985 *Plyometric Explosive Power* (Campaign, Illinois: Human Kinetics Publishers, Inc)
- [2] Rusli L et al 2000 *Research Procedures a Practice Approach* (Jakarta: Rineka Cipta)
- [3] Sukadiyanto 2005 *Research Methodology of Competency Education and Practice* (Jakarta: Bumi Aksara)
- [4] Nur H 1996 *Basics of Athletic Motion* (Yogyakarta: Al Famedia Dadan)
- [5] Syarifuddin A 1996 *Physical Education* (Jakarta: Dirjendikti. Project for the Development of Education Personnel)
- [6] Poerwadarminta W J S 1976 *Basics of Athletics* (Bandung: IKIP Bandung)
- [7] Didi S 1986 *Throw Cakram* (Bandung: Rosdakarya)
- [8] Fox E L 1993 *The Physiological Basic of Physical Education and Athletics* (Philadelphia: College Publishing Saunders)
- [9] Wahjoedi 2001 *Tests and Measurements in Physical Education: Principles and their Application* (Jakarta: Directorate General Olagraha)
- [10] Bustaman H H 2003 *Development of Latest Sports (Study of Experts)* (Jakarta: PT Raja Grafindo)
- [11] Soeharno 1985 *Sports Training Science* (Yogyakarta: FPOK)
- [12] Soekarman 1989 *Fundamentals of Sports Trustees, Trainers and Athletes* (Jakarta: PT. Gelora Aksara Pratama)
- [13] Sugiono 2008 *Quantitative and Qualitative Research Methodology R & D* (Bandung: CV)
- [14] Sejati, A. E. et al. (2017) The Effect of Outdoor Study on the Geography Scientific Paper Writing Ability to Construct Student Character in Senior High School, in Proceedings of the 5th SEA-DR (South East Asia Development Research) International Conference 2017 (SEADRIC 2017). Paris, France: Atlantis Press. doi: 10.2991/seadric-17.2017.22.