



The Effect of Double Leg Bound and Incline Bound Plyometrics Training Methods on Increasing Legs Power

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Abstract. This study aims to determine The Effect of Double Leg Bound Plyometrics Training on Increasing Leg Power, The Effect of Incline Bound Training on Increasing Leg Power, and Differences in the Effects of Double Leg Bound and Incline Bound Plyometrics Training on Increasing Leg Power. The research subjects were female students of the Buleleng volleyball school total 20 people. After data collection and data analysis results obtained research results 1) There is an Effect of Double Leg Bound Plyometrics Training on Increasing Leg Power with t count $2,357 > t$ -table $2,262$ 2) There is an Influence of Incline Bound Training on Increasing Leg Power with t count $(2,286 > 2,262)$ (3) There is no difference in the effect of Plyometrics Double Leg Bound and Incline Bound on Increasing Leg Power of female students because the t -count analysis result is $1.12 < sig$, which is 2.262 at level 0.05 .

Keywords: Plyometrics · Double Leg Bound · Incline Bound

1 Introduction

Volleyball players, especially in Buleleng, have yet to show good performance. This can be seen from the achievements that can be achieved in competitions both at the regional and national levels, as well as the small number of players who can take part in the National League. By looking at the problems mentioned above, it is very necessary to have the right training approach and training method. To train volleyball players, especially in increasing leg power which in the future can support the creation of other movement coordination required in the specifications in volleyball sports such as; pass, service, smash, and block.

2 Plyometrics

Plyometrics comes from the Latin “plyo and metrics”, which means “measurable increases” or a measurable increase (Chu, 1992: 1). This term appears in English terminology.

This is a result of the inaccuracy of the exact definition of plyometrics. Plyometrics was first proposed by a forward-thinking American citizen named Fred Wilt in 1975. Plyometrics training refers to exercises characterized by strong muscle contractions in response to rapid and dynamic loading. Redcliffe and Farentinos (1985: 3–7) argue that “plyometrics training is an exercise that has a special characteristic, namely very strong muscle contractions which are a response to rapid loading or stretching of the muscles involved or also called muscle spindle reflexes.

Plyometric training has long been used in training programs for athletes who need power in sporting events aimed at enhancing explosive style (Markovic G and Mikulic 2010). In addition, Markovic G and Mikulic (2010) stated that “Plyometric training is considered capable of increasing the stretch-shortening cycle stimulant by increasing muscle tendons during the eccentric phase by reducing the duration of the transition between the eccentric and concentric phases. Plyometric exercises are specific exercises used to develop explosive power (Brown et al. 2007).

1. Double Leg Bound

Radcliffe and Farentinos (1985: 28) Double Leg Bound is a plyometrics exercise that is performed quickly and explosively to increase lower leg power by jumping up and down (with two legs supported).

The implementation of the double leg bound is starting from the half squat position, with both arms at the side of the body, looking forward. Next, jump forward and up using the hip extension and hand movements to push forward. Try to reach maximum height and distance. After landing back to the starting position to do the next bounding.

2. Incline Bound

Radcliffe and Farentinos, (1985: 32) Incline Bound is a jumping motion exercise with both or one foot resisting on the ground of the stadium stairs or an inclined plane with an inclination of approximately 20 degrees to jump and land by throwing/bounding.

The implementation of the Incline Bound starts from the same initial position as the double leg bound and starts from the bottom of the inclined plane or stairs. The movement is the same as the double leg bound, but for the incline bound the participant jumps step by step or jumps up with a distance determined by the number of jumps per set.

3. Volleyball Game

The volleyball game is a game that requires special skills, therefore in playing volleyball several techniques must be mastered by someone. The technique is how to do or carry out something to achieve certain goals effectively and efficiently. Techniques in volleyball can be interpreted as a way to play the ball efficiently and effectively following applicable regulations to achieve optimal results. In Yunus (1992: 109), there are various basic techniques in volleyball games, including; passing techniques, service techniques, smash techniques, and block techniques. To perform all these techniques, it is necessary to have good leg power, especially smash and block.

3 Method

This research includes field experimental research. This method was chosen to determine the symptoms of the treatment applied to the sample. As Sudjana (2005: 278) says the

amount of observational data can be classified into several factors, characteristics, or attributes with each factor or attribute consisting of several classifications, categories, groups, or maybe levels. Based on the results of observations, there is such a phenomenon that will be examined regarding the association or relationship between factors.

The research design uses a randomized pre-test and post-test design, and the research subjects are people who place data for inherent research variables and problems (Arikunto, 2002: 116). In this study, the research subjects were female students of the Buleleng volleyball academy in 2021, totaling 36 students). The sample size is 20 people from the entire population by lottery. From the 20 samples, the leg power ability was measured. Based on the score from the measurement results of leg power. Furthermore, to determine the sample for each treatment using ordinal pairing (ABBA).

The research was carried out from May to July. Data collection is in the form of a vertical jump test. This data was retrieved 2 times, namely during the pre-test and post-test, and is a picture of the power of female students at the Buleleng volleyball school in 2021.

In obtaining data following the objectives of the researcher, the data collection method used is to use a vertical jump test sheet as follows.

4 Results and Discussion

The evaluation of the results of the leg power test of Buleleng volleyball school students can be seen in the following Table 1.

Double leg bound exercise after data analysis obtained a t-hit of $2,357 > t\text{-table of } 2.262$ at level 0.05. So null hypothesis is rejected, and it can be said that exercise can increase leg power (Table 2).

Table 1. DOUBLE LEG BOUND TEST RESULT

No	Nama	Test result	
		Pre Test	Post Test
1	Female 1	20	55
2	Female 2	22	55
3	Female 3	22	54
4	Female 4	20	54
5	Female 5	22	55
6	Female 6	22	54
7	Female 7	20	50
8	Female 8	20	55
9	Female 9	20	55
10	Female 10	22	50
Average		21	53.7

Table 2. INCLINE BOUND TEST RESULT

No	Nama	Test result	
		Pre Test	Post Test
1	Female 1	22	55
2	Female 2	20	50
3	Female 3	22	51
4	Female 4	22	55
5	Female 5	18	55
6	Female 6	20	50
7	Female 7	20	50
8	Female 8	24	55
9	Female 9	24	50
10	Female 10	22	54
Average		21	52

Table 3. COMPARATION POST-TEST ANALYSIS

No	Double Leg Bound post-test	Incline Bound Plyometric post-test	p1 ²	p2 ²
1	55	55	3025	3025
2	55	50	3025	2500
3	54	51	2916	2601
4	54	55	2916	3025
5	55	55	3025	3025
6	54	50	2916	2500
7	50	50	2500	2500
8	55	55	3025	3025
9	55	50	3025	2500
10	50	54	2500	2916
$\sum x^2$	537	525	28873	27617
df	9	9	9	9
n	10	10	10	10
T-hit	1.12			

Incline bound exercise after data analysis obtained a t-hit of $2.286 > t\text{-table of } 2.262$ at level 0.05. So the null hypothesis is rejected and it can be said that exercise can increase leg power (Table 3).

After data analysis, the t-hit was $1.12 < \text{sig}$, which is 2.262 at the level of 0.05. So the null hypothesis is accepted and it can be said that there is no difference in the effect between double-leg bound exercise and incline-bound exercise on increasing leg power.

5 Conclusion

Following the results of the study it can be concluded.

1. Double leg bound exercise is effective for increasing leg power which can be seen from the results of data analysis, with t-hit of $2,357 > t\text{-table of } 2.262$ at level 0.05. so H_0 is rejected, and it can be said that exercise can increase leg power.
2. Incline-bound exercise is effective for increasing leg power which can be seen from the results of data analysis, with a t-hit of $2.286 > t\text{-table of } 2.262$ at level 0.05. so H_0 is rejected, and it can be said that exercise can increase leg power.
3. There is no difference in the effect between the double-leg bound and incline-bound training methods in increasing leg power. This can be seen from the results of the t-hit data analysis of $1.12 < t\text{-table } 2.262$ at the level of 0.05. so H_0 is accepted, and it is said that there is no difference in the effect of double leg bound exercise with incline bound exercise on increasing leg power in female students of Buleleng volleyball school.

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