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Effect of plyometric exercises on vertical jump of volleyball players

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Abstract

The purpose of present study was to scrutinize the effect of Plyometric exercises on vertical jump of volleyball players. For achieving the purpose of the study, data was collected on 20 volleyball players from Punjabi university Patiala. The subjects were selected randomly. The subjects were purposively divided into two groups: Controlled Group (N1=10) and Experimental Group (N2=10). The plyometric training programme was carried out alternative days only which may be considered as the delimitation of the study. The following two different type of training program will be given (a) Stair exercise, 3 set, each set of 1 minute (b) Bench exercise, 3 set, each set of 1 minute. To compare the effect of Plyometric exercises on vertical jump of volleyball players, mean, standard deviation and t-test were employed with the help of statistical package of SPSS. To test the hypothesis the significance level was set at 0.05 percent. It was found that the plyometric training is an effective means for improving the vertical jump and no significant improvement in the case of a control group may be a reflection of inactivity, Floor exercise.

Keywords: Volleyball, vertical jump, plyometric exercise

1. Introduction

Today there is not a single sport in the world at the competitive level for which resistance training in some or the other form is not used as conditioning exercises. The proliferation of physical education and sports programs during the last four decades has been remarkable. Our programs has expended from the traditional school setting to community, home, worksite, commercial, and medical settings. School-community partnerships bring sport instruction and fitness programs to adult in the community and offer increased opportunities for youth involvement.

The term muscular power has had common usage to indicate the ability to release maximum muscular force in the shortest possible time. The best widely used involving the leg musculature are the vertical jump and standing broad jump. A pure power movement of the leg muscles would restrict the takeoff for a jump to set position, such as crouch, eliminate the use of arms to assist the jump. Sport training is a process of athletics improvement, which is organized on the basic of scientific principles through systematic development of mental and physical efficiency, capacity and motivation to enable the athletes to produce outstanding and record breaking athletic performance. School physical education programs focus on promotion of lifespan involvement in physical activity. Students learn the skills, understanding, and attitudes that will enable them to participate in various physical activities throughout their lives. Elementary school physical education programs focus on helping children attain competency in the fundamental skills and movement concepts that from the foundation for later development of specialized games, sport, fitness, and dance activities.

Plyometric (plyo-more or greater, metric-measured or quantity) exercise based upon the belief that a rapid lengthening of muscle just prior to the contraction will result in a much stronger contraction. Depth jump is one of the many plyometric exercises. In depth jumping the athlete stands on a shelf generally 2m., of height above the ground, stepping of the shelf they immediately perform a maximal effort vertical or horizontal jump after landing on the ground. Basic strength level must be attained before starting a plyometric training programme. The choice of exercise must correspond to age, sex and biological development of sports person.

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There should be a gradual increase of stress during a complete training cycle. Body weight should be the determining factor in assigning the value of jumps in work out. Generally the number of sessions to devote the plyometric the plyometric training is 2 or 3 times per week [4].

Vertical jump ability is critical for success in volleyball. Jumping utilized during the jump set, jump serve, blocking and spiking. A successful player must not also be able to jump high but must also be able to reach that height quickly. This requires an ability to generate power in a very short time.

1.1 Statement of the Problem

The purpose of the study is to find the "Effect of Plyometric exercises on vertical jump of volleyball players".

1.2 Hypothesis

On the basis of available literature, concern with supervisor and scholar's own understanding it was hypothesized that there might be significant effect of plyometric training on vertical jump of physical education students.

2. Method and Procedure

2.1 Selection of the subject

For the purpose of the study 20 volleyball players from

Punjabi university Patiala was selected randomly.

2.2 Collection of data

Pre-test was taken before the implementation of training programme after three month training programme post-test was constructed. There were two groups i.e. controlled & experimental. 10 subjects were participating in each group. The treatment was received by experimental group only.

2.3 Selection of test

Vertical Jump

Administration of test

The subject was asked to stand close the wall with heels on the ground and touch the wall, with fully stretched hand reading of height was recorded and then he put chalk powder on his fingertips. As he jumped & touched the wall, the powder left a mark on the board and this reading was recorded.

Scoring

The difference between standing and jump was calculated and this was considered the score of vertical jump.

2.4 Administration of Plyometric Training Programme

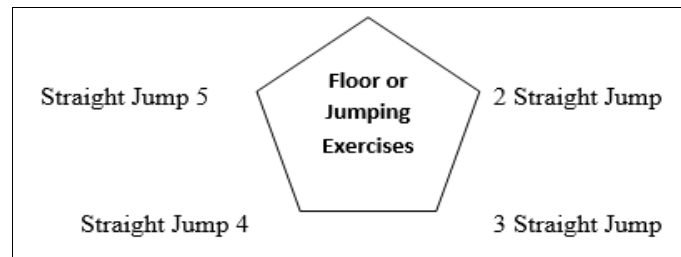


Fig 1: Monday Straight Jump

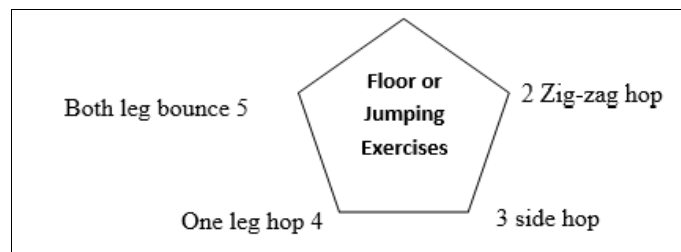


Fig 2: Wednesday Both Leg Hop

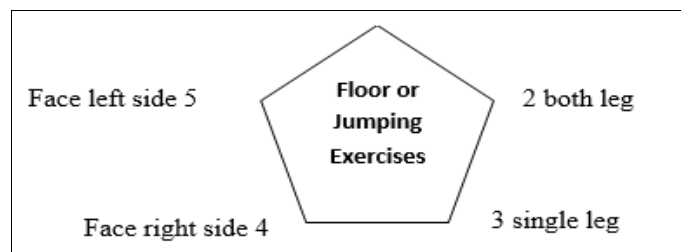


Fig 3: Friday Sit-up

3. Statistical Analysis

After the collection of relevant data, it was processed and analyzed with descriptive statistics. To compare the subjects mean, standard deviation and t-test was employed with the help of statistical package of SPSS. The significance level was set at 0.05 percent.

4. Result and Finding

Table 1: Vertical Jump of Experimental Group

S. No.	Test	No. of Subjects	Mean	Obtained "t" value	Tabulated "t" value
1	Pre-Test	10	23	3.22	2.182
2	Post-Test	10	31		

From the table 1, it is evident that the obtained t value 3.22 which are significant at 0.05. Level, with df =9. As the value is greater than tabulate t value 2.182.

Table 2: Vertical Jump of Control Group

S. No.	Test	No. of Subjects	Mean	Obtained "t" value	Tabulated "t" value
1	Pre-Test	10	21	1.17	2.362
2	Post-Test	10	21		

From the table 2, it is evident that the obtained t value 1.17 which is significant at 0.05 level, with $df = 9$. As the value is less than tabulate t value 2.362. It may be said that there is no difference in pre-test and post-test on plyometric exercise.

4. Discussion of Finding

The raw data was computed and analysis of data showed that the plyometric training improved significantly in the vertical jump abilities of experimental group. The reason for better performance in experimental group may be continues participation in training and the load which was experienced by the subjects in the training programme was adequate to produce significant development in the vertical jump. In case of control group it may be due to their non-participation in the training programme.

Plyometric training is used as the latest methodology for developing the vertical jump abilities. The activities which activate the stretch reflex mechanism effect the body power and comes under the category of plyometric exercise.

5. Discussion of Hypothesis

On the basis of the above findings, it is obvious that the treatment contributed to the development of vertical jump. Hence, the hypothesis framed for the study is accepted.

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