Effect of 8 Weeks Plyometric Training on the Sports Performance of the Male Jumpers

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Abstract

The purpose of the study was to determine the effect of 8 weeks plyometric training on the sports performance of the male jumpers. For the purpose of the study 50 male long jumpers in the age range of 17-30 years were selected from different coaching centers of Delhi who were further randomly divided into two equal groups (25 each in experimental group and control group). The experimental group underwent plyometric training twice a week for 8 weeks with each session consisting of 30-45 minutes duration with additional warm up time. A week schedule was repeated to the proceeding week and the load was adjusted progressively by 10%. The control group was not allowed to take part in the specific experimental training except their daily general warming up and normal activities. The long jump performance (Pre Test and Post Test) was the criterion measure for the sports performance of the male jumpers. Analysis of Covariance was employed as the statistical tool for the study. A significant difference in the sports performance was found between the experimental group and control group as the posttest means obtained were 6.50 m and 6.20 m with F- ratio of 4.72 at p≤0.05.

KEYWORDS: Sports Performance, Long Jump.

Introduction

In sports, today best performance can only be achieved through a meticulously planned, executed and controlled training system based on the scientific knowledge, theoretical and methodical fundamental of sports training, sports scientists and physiologists have been of the view that human capacity of performance among athletes had its limits in the matter of standards of efficiency. But, this belief has been proved false and the barriers of performance have been surpassed by the athletes as a result of continued improvement in the technique, method of training and coaching.

The long Jump is notable for two of the longest Standing world records in any track and field event. In 1935, Jesse Owens set a long Jump world record that was not Broken until 1960 by Ralph Boston. Later Bob Beamen Jumped 8.90 meters at the 1968 summer Olympics, a Jump not executed until 1991. On August 30 of that year, mike Powell of the USA leapt 8.95 meters at the world championship in Tokyo.

Plyometric (Plyo-more or greater; metric-measured or quantity) exercise is based upon the belief that a rapid lengthening of a muscle just prior to the contraction will result in a much stronger contraction. –Clutch(1983). Plyometric training may be viewed as an extension of the “shock” method of strengthening muscles for athletic performance recommended by Verkhoshanski of Russia (1968). The shock method advocated by Verkhoshanski consisted of rebounded jumps from a height to develop the reactive neuro-muscular apparatus of the athlete. The term plyometric involves the muscles working both concentrically and eccentrically. Plyometric is based upon the
belief that a rapid lengthening of muscles just prior to the contraction will result in much stronger contraction. The added contractile strength is believed to be due to a stretch of muscle spindles involving the myotactic reflex and resulting in an increased frequency of motor unit discharge. Plyometric training is one of the best methods to develop explosive power for sports. Basically plyometric’s provide a method to train for the optimum relationship between strength and speed which will ultimately manifest itself as explosive power. Today plyometric movements are performed in almost all sports.

Methodology

For the purpose of the study 50 male long jumpers in the age range of 17-30 years were selected from different coaching centers of Delhi who were further randomly divided into two equal groups (25 each in experimental group and control group). The experimental group underwent plyometric training twice a week for 8 weeks with each session consisting of 30-45 minutes duration with additional warm up time. The training session was as follows:

<table>
<thead>
<tr>
<th>Day I</th>
<th>Day II</th>
</tr>
</thead>
<tbody>
<tr>
<td>➤ Depth jumps - 3 sets x 8-10 reps</td>
<td>➤ Single Arm Throws - 3 sets x 8-10 reps</td>
</tr>
<tr>
<td>➤ Over the Back Toss - 3 sets x 8-10 reps</td>
<td>➤ Hurdle Jumps - 3 sets x 8-10 reps</td>
</tr>
<tr>
<td>➤ Lateral High Hops - 3 sets x 8-10 reps</td>
<td>➤ Wall Throws - 3 sets x 8-10 reps</td>
</tr>
<tr>
<td>➤ Squat Throws from Chest - 3 sets x 8-10 reps</td>
<td>➤ Lateral Barrier Jumps - 3 sets x 8-10 reps</td>
</tr>
</tbody>
</table>

A week schedule was repeated to the proceeding week and the load was adjusted progressively by 10%. The control group was not allowed to take part in the specific experimental training except their daily general warming up and normal activities. The long jump performance (Pre Test and Post Test) was the criterion measure for the sports performance of the male jumpers. Analysis of Covariance was employed as the statistical tool for the study.

Findings

Table – I: Effect of 8 Weeks Plyometric Training on the Sports Performance of the Male Jumpers

<table>
<thead>
<tr>
<th>Tests</th>
<th>Experimental Group</th>
<th>Control Group</th>
<th>S.V.</th>
<th>Df</th>
<th>SS</th>
<th>MSS</th>
<th>F-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>5.93</td>
<td>6.11</td>
<td>A.G.</td>
<td>1</td>
<td>3.111</td>
<td>3.111</td>
<td>1.52</td>
</tr>
<tr>
<td>W.G.</td>
<td>48</td>
<td>97.655</td>
<td></td>
<td></td>
<td>2.034</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>6.50</td>
<td>6.20</td>
<td>A.G.</td>
<td>1</td>
<td>9.687</td>
<td>9.687</td>
<td>4.72*</td>
</tr>
<tr>
<td>means</td>
<td></td>
<td></td>
<td>W.G.</td>
<td>48</td>
<td>98.475</td>
<td>2.051</td>
<td></td>
</tr>
<tr>
<td>Adjusted</td>
<td></td>
<td></td>
<td>A.G.</td>
<td>1</td>
<td>9.996</td>
<td>9.996</td>
<td>4.79*</td>
</tr>
<tr>
<td>Posttest</td>
<td>6.45</td>
<td>6.14</td>
<td>W.G.</td>
<td>47</td>
<td>98.016</td>
<td>2.085</td>
<td></td>
</tr>
<tr>
<td>means</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level

Table- I clearly shows that the sports performance (pretest) of the experimental group and control group before undergoing the 8 weeks plyometric training were 5.93 m and 6.11 m respectively. Before training both the groups were not significantly different in
terms sports performance as the ‘f’ value obtained was 1.52 at p>0.05. While after 8 weeks plyometric training the sports performance (posttest) of the experimental group and control group were found as 6.50 m and 6.20 m respectively. A significant difference was found between both the groups as the ‘f’ value obtained was 4.72 at p≤ 0.05. Similarly, the adjusted posttest means of sports performance of the experimental group and control group were found as 6.45 m and 6.14 m respectively and both the groups were found to be significantly different as the ‘f’ value obtained was 4.79 at p≤ 0.05.

The mean values of sports performance of the male long jumpers of Delhi before and after the 8 weeks plyometric training has been graphically represented in the figure 1.

![Figure 1: Effect of 8 Weeks Plyometric Training on the Sports Performance of Male Jumpers](https://www.playtheball.com)

**Discussion on the Findings**

This is an experimental study which compares the sports performance of the male jumpers of Delhi. The sports performance was measured by administering long jump performance. The study was homogenous in nature as sports performance for both group’s i.e. experimental group and control group showed non-significant difference at the beginning of training. The results showed a significant difference in the sports performances of both groups after 8 weeks of plyometric training showing the efficacy of plyometric training. These results supported the finding of previous researches concerning effects of plyometric training on the sports performance in different sports. The results of this study indicating improvement in sports performance are in agreement with the similar findings reported by Matavulj et al (2001); Toumiet al (2004); Wisloff et al (2004); Hoffman et al (2005) and McMillan et al(2005). In the present study, plyometric training of 8 weeks showed different magnitudes of improvement long jump performance. Power is the ability to produce muscular forces very rapidly and is therefore very important in jumping performance. Plyometric exercises are specialized exercises that enable a muscle to reach maximal strength in the shortest space of time. This works by stretching a muscle and then relying on its elastic properties to produce greater forces than are normally possible in the reflex contraction (as the muscle returns to it’s resting length). In order to achieve this greater muscular force, the muscle must contract with in the shortest possible time following lengthening (www.playtheball.com). Plyometric training administered to experimental group produced improvement in the sports performance when compared...
to the performance of the control group. It can be speculated that improvements were a result of enhanced motor unit recruitment patterns as suggested by Potteiger et al (1999). Another possible reason can be neural adaptation which can occur when athletes respond or react as a result of improved co-ordination between the CNS signal and proprioceptive feedback as mentioned by Craig (2004). Several authors have shown that an eccentric contraction immediately preceding a concentric contraction will significantly increase the force generated concentrically due to storage of elastic energy. Donald Chu considers plyometrics to be among the best that can improve speed, strength, acceleration and explosive power allowing him or her to remain at the cutting edge of their sport (www.physioroom.com).

Conclusion
Results of the study show that 8 weeks Plyometric training has significant effect on sports performance of the male jumpers. Thus there is need to undergo Plyometric if one wants to get the improvement in jumping performance for competitions.

Reference


