EFFECT OF COMBINED CORE AND PLYOMETRIC TRAINING PROGRAMME ON POWER AND MUSCULAR STRENGTH OF TRIPURA CRICKETERS

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ABSTRACT

To evaluate the effectiveness of 12 weeks combined core and plyometric training programme on power and muscular strength among selected Tripura cricketers. Pre test – post test randomized group design were undertaken for the present study which consist of an experimental group and control group. Equal number of subjects (n= 30) were assigned randomly to both the groups. The experimental group was exposed to 12 weeks combined core and plyometric training programme whereas, no treatment was given to control group. For the purpose of the present research work a total of 60 Cricketers were randomly selected for the present research work. Power and muscular strength was selected as a dependent variable and 12 weeks combined core and plyometric training programme was considered as an independent variable. The data was analyzed by applying one tailed t-test was used to draw appropriate conclusions and to find out the effect of 12 weeks combined core and plyometric training programme on power and muscular strength variables among selected Tripura cricketers. The significance level was set at 0.05. The results indicated that there was significant difference found in experimental group selected Tripura state cricketers on power and muscular strength variables in comparison to control group. The findings of this study showed that 12 weeks repeated combined core and plyometric training programme was an effective training tool to improve a cricketers’ power and muscular strength abilities.

Keywords: Core, Plyometric, Programme, Power, and Muscular Strength
INTRODUCTION

The purpose of all sports training is the maximization of the physical and mental elements required to perform exercises or play games. Therefore, the application of specialized and specific training suitable for sports is important. In particular, the acquisition of maximum muscle strength and power is an essential element of all sports.

Plyometric and core training is widely used as a method of developing explosive power capacity in those sports that require jumping ability such as athletics, basketball, and volleyball (Kim, 2012). Most sports require various kinds of fast and slow muscle strength and speed (Park, 2000). Although typical training methods for increasing the muscle strength of athletes include weight training, such as resistance exercises and plyometric training (Yang et al. 2007), the power necessary for explosive jumping refers to the power exhibited in dynamic states (Lee & Choi, 2005). Plyometric training is a type of muscle strength exercise that can improve basic physical strength and it has been extensively studied for the improvement of exercise performance ability. It is an explosive and repetitive rebounding load type exercise that uses the muscles’ stretch reflexes and stretch-shortening cycles to develop lower extremity muscles (Impellizzeri et al. 2007 & Komi, 1992). Stretch reflexes are used to promote motor unit mobilization in order to reduce differences between speeds and muscle strength (Wilmore et al. 2008).

In cricket, diverse efforts have been made to try and enhance records through active studies and the development of training methods. With increasing interest in cricket, the importance of athletic scientification has been recognized. Desired records in performance cannot be achieved only with natural movements and efforts, but also require more reasonable and scientific training content and methods (Lee, 2005). The physical strength and power elements required for cricket throwing, bowling, batting events include muscle strength, swiftness, agility, speed, flexibility, and physical balance. Although plyometric training and core training are implemented as representative training methods for improving swiftness and agility, most studies of it have been conducted with players of other sports.

Therefore, the purpose of the present study was to identify the effects of 12 weeks combined core and plyometric training programme on power and muscular strength among selected Tripura cricketers in order to develop more efficient training methods.

METHODOLOGY

For the purpose of the present research work a total of 60 cricketers were randomly selected. These subjects had represented Tripura Cricket Association (Affiliation to BCCI) in tournaments. The age of the subjects were ranging from 19 years to 31 years. The average age was being 25 years. Power and muscular strength were selected as a dependent variable and 12 weeks of combined core and plyometric training programme was considered as an independent variable. Power was measured in centimeters rounded off 0.01 centimeter by using measuring steel tape. Whereas, muscular strength was measured in kilograms rounded off 0.1 kilogram by using Olympic set (Nelco). To test power and muscular strength the vertical jump and bench press test were respectively administrated for Tripura cricketers. Combined core and plyometric training programme including upper and lower body were administered three times a week on experimental group subjects at M.B.B. Stadium in Agartala for a period of 12 weeks (84 days) while the control group underwent only their regular practice schedule during morning time. Before the administration of training programme, vertical jump and bench press test were respectively administrated at same venue on both the group’s namely experimental group and control group respectively to collect pre test data. After the completion of 12 weeks training programme again the same power and muscular strength tests were conducted to
collect the post training data. To analyze the data t-test was computed and the significance level was set at 0.05.

**FINDINGS**

The findings of the study are given below:

Table 1.0: Analysis of One tailed t-test on the Data of Running between the Wickets among Selected Groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>Groups</th>
<th>Df</th>
<th>Pre-test Mean</th>
<th>Post-test Mean</th>
<th>DM</th>
<th>‘t’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (Centimeters)</td>
<td>Control</td>
<td>29</td>
<td>47.36</td>
<td>49.53</td>
<td>2.16</td>
<td>3.37*</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>29</td>
<td>42.73</td>
<td>51.20</td>
<td>8.46</td>
<td>11.42*</td>
</tr>
<tr>
<td>Muscular Strength (kilograms)</td>
<td>Control</td>
<td>29</td>
<td>57.66</td>
<td>57</td>
<td>-0.66</td>
<td>1.44</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>29</td>
<td>56.66</td>
<td>62.83</td>
<td>6.17</td>
<td>10.79*</td>
</tr>
</tbody>
</table>

N = 30
* Significant at .05 level. ‘t’ 0.05 (29) = 1.70

The graphical representation of pre and post test means of control and experimental group for power (vertical jump test) and muscular strength (one repetition maximum bench press test) are presented in figure 1.0 and 1.1.

**DISCUSSION**

The control and experimental group subjects were outperformed in power variable respectively. This could be the fact that rains for the play spoilsport in the control group participation, as the region gets heavy shower (2001 Census average annual rainfall of Tripura state was approximately 192.8 centimeters) due to its location in the Lower Himalayan Region Poorvanchal Ranges (Such as, Garo; Khasi; and Jaintia Hills). However, domiciles of North East in general are soccer lover and in the absence of extensive facilities and heavy rain during the training days lead
them to practice soccer. As the results of control group are fair remarkable rich in ability such as power in comparison to experimental group subjects. Athanasios et. al. (2008) examined the movement actions performed during two different small-sided games and their effects on a series of field physical conditioning and technical tests. Thirty-four young soccer players (age: 13 ± 0.9 yrs; body mass: 62.3 ± 15.1 kg; height: 1.65 ± 0.06 m) participated in this study. Soccer player performance was evaluated using five field tests: a) 30m sprint, b) throw-in for distance, c) Illinois Agility Test, d) dribbling the ball and e) horizontal jump for power before, in the middle and after the implementation of both game situations and the results of the present study indicated similar findings that soccer side games provide higher stimulus for physical conditioning like power and agility and technical improvement and their use for training young soccer players is recommended. This fact could be the main reason for significant within group differences results in both the groups, namely control and experimental respectively to develop power variable. On the other hand, experimental group in muscular strength variable found significant as compared to control group. This could be due to the fact that the experimental group hence underwent a with rigorous and regimented fitness regime in a structured set-up as prescribed 12 weeks combined core and plyometric training programme by the researcher in comparison to non-structured set-up used by the control group owing to their remote geographical location with reference to the place of training. In reference to this, Rolf et.al. (2012) also investigated the effect of 12 week exercise programme using a combination of static core and lower limb exercises on trunk strength and lower limb stability and similar facts were reported that combined core and lower limb exercises improves strength and stability in Australian soldiers.

CONCLUSION

The results indicated that there was a significant improvement had exhibited by experimental group cricketers on muscular strength after exposed to 12 weeks combined core and plyometric training programme in comparison to control group subjects. Hence, it is concluded that combined core and plyometric training programme was an effective training method to improve a cricketers’ muscular strength.

REFERENCES