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Effect of parallel resistance and plyometric training on coordinative abilities among university level cricket players

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Abstract

For the purpose of the study sixty (60) students were randomly selected as subjects from Central University of Kashmir and the age was ranged between 18 and 25 years. The selected subjects were randomly assigned into two equal groups such as training group (TG) and the control group (CG) for the strengths of fifteen (n = 30) each. Experimental group underwent respective Parallel Resistance training programme on coordinative abilities for twelve (12) weeks for four to five days. The control group did not involve in any special training apart from their regular activities. The coordinative abilities were taken as a criterion variable for the present study and it was measured by orientation ability test. Analysis of covariance (ANCOVA) was used to analyze the collected data. The results revealed that the Parallel Resistance training made significant improvement on the coordinative abilities among of the selected subjects. The level of confidence was fixed at 0.05 in all cases.

Keywords: Parallel resistance training, coordinative abilities, orientation ability, cricket players

Introduction

The game of cricket has historically been known as "the gentleman's game". Until about three decades ago cricketers were certainly not the fittest athletes on the planet. Often it was remarked that cricket is physically an easy game which requires one to stand on the field for most of the day and requires little running, jumping or strength (Kushwah, 2012) ^[1]. The highly developed levels of fielding in the modern times require a player to have strong shoulders and arms to make direct hits at the stumps. The modern player is leaner, stronger and far more athletic. For cricket enthusiasts there is nothing to match the meaningful contests and excitement generated by the game's subtle shifts in play (Hardayal singh, 1984).

The British brought cricket to India in the early 1700 with the first cricket match played in 1721. In 1848, the Parsi community in Bombay formed the Oriental Cricket Club, the first cricket club to be established by India Ltd. After slow beginnings, the Europeans eventually invited the Parsies to play a match in 1877. By 1912, the Parsis, Sikhs, Hindus and Muslims of Bombay played a quadrangular tournament with the Europeans every year. In the early 1900s, some Indians went on to play for the England cricket team. Some of these, such as Ranjit singhji and KS Duleep singhji were greatly appreciated by the British and their names went on to be used for the Ranji Trophy and Duleep Trophy – two major first-class tournaments in India. In 1911 an Indian team went on their first official tour of the British Isles, but only played English county teams and not the England cricket team.

Resistance training is a form of strength training in which each effort is performed against a specific opposing force generated by resistance i.e. resistance to being pushed, squeezed, stretched or bent (Syed *et al*, 2006). Exercises are isotonic if a body part is moving against the force. Exercises are isometric if a body part is holding still against the force. Resistance exercise is used to develop the strength and size of skeletal muscles. Property performed, resistance training can provide significant functional benefits and improvement in overall health and well being.

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Many years coaches and athletes have sought to improve power in order to enhance performance. Throughout this century and no doubt during the times before, jumping, bounding and hopping exercises were especially used in various ways to enhance athletic performance. In recent years this distinct method of training for power or explosiveness has been termed Plyometrics (Kiranpal Singh, 2004) [5]. Plyometric by definition is, a type of exercise using explosive movements to develop muscular power, bounding, hopping and jumping.

Coordinative ability means an ability to quickly and purposefully perform difficult spatio-temporal movement structures. Within this context, coordination abilities are understood as an externally visible manifestation of the control and regulation processes of the motor activity of the central nervous system (Simonek and Jaroslav, 2009) [4]. The complex of coordination abilities consists of a group of basic coordination abilities

Methodology

To achieve the purpose sixty (60) cricket players were selected as subjects from Central University of Kashmir India, the age of the selected subjects was 18-25 years. The subjects were divided in to two groups namely physical training (n=30) and control (n=30). The physical training group underwent training for 60 min/4 days/12 weeks including warming up and cooling down exercises.

Experimental training group underwent Parallel Resistance training programmes for 12 weeks for four to five days per week. The control group did not involve in any special training apart from their regular activities. The coordinative abilities were taken as a criterion variable for the present study. The collected data were statistically examined by analysis of covariance (ANCOVA). The confidence level was fixed at 0.05 levels, which is appropriate to the present study.

Result Discussion and Findings

Table 1: Analysis of covariance of pretest post test and adjusted post test on orientation ability of different groups

Test	EX.1	EX.2	EX.3	CG	SV	SS	DF	MS	F
Pretest	11.41	11.56	11.78	11.30	B	1.92	3.00	0.64	2.47
					W	14.56	56.00	0.26	
Post Test	10.28	10.11	9.63	11.75	B	37.69	3.00	12.56	47.98*
					W	14.66	56.00	0.26	
Adjusted	10.28	10.10	9.62	11.75	B	34.56	3.00	11.52	43.23*
					W	14.66	55.00	0.27	
Mean Diff.	-1.13	-1.46	-2.15	0.45					

- * Significant at.05 level of confidence.
- SV- Source variances, SS-Sum of squared, df-degrees of freedom, MS-Means square.
- (The table values required for significance at.05 level of confidence for 3 and 56 and 3 and 55 are 2.77 respectively).

Table 2: Scheffe’s post hoc test means differences on Orientation ability among four groups

EXP.1	EXP. GP 2	EXP. GP.3	Control	MD	CI
10.28	10.10			-0.18	0.54
10.28		9.62		-0.66*	0.54
10.28			11.75	1.47*	0.54
	10.10	9.62		-0.48	0.54
-	10.10		11.75	1.65*	0.54
		9.62	11.75	-2.13*	0.54

* Significant at 0.05 level of confidence.

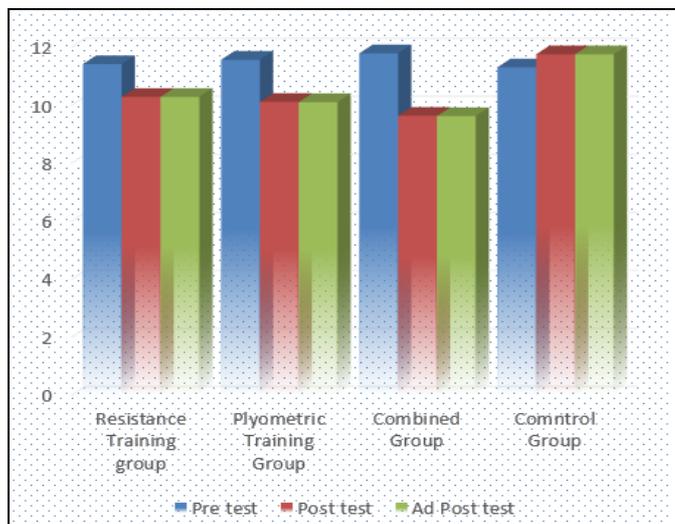


Fig 1: The mean values of orientation ability are shown graphically

Discussion

The result of the table I.1 shows the analyzed data on

Orientation ability. The pre-test means of Orientation ability were 11.41 for resistance training group, 11.56 for plyometric training group, 11.78 for combined group and 11.30 for control group. the obtained “F” ratio of 2.47 was lesser than the table F-ratio 2.77. Hence the pre-test was not significant at 0.05 level of confidence for the degrees of freedom 3 and 56.

The post-test means of Orientation ability were 10.28 for resistance training group, 10.11 for plyometric training group, 9.63 for combined group and 11.75 for control group. The obtained “F” ratio of 47.98 was greater than the table F-ratio 2.77. Hence the post-test was significant at 0.05 level of confidence for the degrees of freedom 3 and 56.

The adjust post-test means of Orientation ability were 10.28 for resistance training group, 10.10 for plyometric training group, 9.62 for combined group and 11.75 for control group. The obtained “F” ratio of 43.23 was greater than the table F-ratio 2.77. Hence the adjust post-test was significant at 0.05 level of confidence for the degrees of freedom 3 and 56.

Since, four groups were compared, whenever the obtained ‘F’ ratio for adjusted post test was found to be significant, the Scheffe’s test to find out the paired mean differences and it was presented in Table I.1.

Table - I.2 shows the Scheffe’s post-hoc test results. The ordered adjusted final mean difference for orientation ability of isolated and combined resistance and plyometric training groups and control group were tested for significance at 0.05 level of confidence against confidential interval value.

All the training groups namely resistance training, plyometric training and combined training and control group were 1.47, 1.65 and 2.13 respectively and it was seen to be greater than the confidential interval value of 0.54. Hence all the training groups were better than the control group.

The mean differences between resistance training and combined training was 0.66 it was greater than confidence interval 0.54, hence there was a significant difference between these groups. Resistance training group and plyometric training group was 0.18 and plyometric training and combined training group was 0.48, it was found to be lesser than confidential interval value of 0.54, hence these groups were equal in improving the orientation ability. The mean values of orientation ability are shown graphically in Figure. (i) Above.

Findings

Syed *et al.*, (2014) [3], conducted a study to determine the relationship among coordinative abilities between Tennis and Squash men players. The samples were 20 Tennis and 30 Squash Inter University players between 18–25 years. The coordinative abilities studied were orientation, differentiation, reaction, balance and rhythmic. Test items used for different abilities were Zigzag run, backward medicine ball throw, lateral jumping ability, beam walk and long nose tests to find the difference in performance of the players. Mean, standard deviation and 't' test were used as statistical tools and level of significance was 0.05. The study showed quite interesting results as the game of tennis and squash are racket games and have many skills very similar to each other. The difference lies in the area of the court, the equipment used for play and the time limit of the game. Tennis players have shown better performance in orientation, differentiation, balance and rhythmic abilities due to the above difference and is in line with other studies done by Lees (2008), Miller, *et al.* (2001) etc. The only variable in which the squash players have shown some significance is the reaction ability which may be due to small area of play and the need to be quick as the time is too short to respond to the shots during the game. It is concluded that there exists significant difference in terms of all the coordinating abilities between the tennis and squash players and that the tennis players possessed better coordinating abilities than the squash players.

Bal and Sandhu (2014) [7] conducted a study is to find out the significant differences of psychomotor abilities, among cricket players of different level of achievement. For the purpose of present study, One hundred seventy seven (N=177), Male District, State and National Level Cricket Players between the age group of 21-25 years (Mean \pm SD: age 22.89 \pm 1.76 years, height 176.04 \pm 4.18 cm, body mass 73.76 \pm 4.63 kg) were selected. The subjects were purposively assigned into three groups: Group-A: District level cricket players (n=80), Group-B: State Level Cricket Players (n=65) and Group-C: National level cricket players (n=32). The statistical package for the Social Sciences (SPSS) version 14.0 was used for all analyses. In all the analyses, the 5% critical level (p 0.05) was considered to indicate statistical significance. The differences in the mean of each group for selected variable were tested for the significance of difference by One-way Analysis of Variance (ANOVA). For further analysis Post-Hoc Test (Scheffe's Test) was applied. The results revealed significant differences between found among district, state and national level cricket players on the sub-variables; muscular strength, muscular power, muscular endurance, running speed, running agility, jumping ability, throwing ability, flexibility and balance.

Conclusion

The result of the study revealed that the Parallel Resistance training and Plyometric training has significant improvement

on Coordinative abilities among University level cricket players. It was also concluded that the parallel resistance training method and plyometric trainings are one of the best training methods for improving orientation abilities as well as the physical fitness components among university level cricket players.

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