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T Sundararaj

Ph.D. Scholar, Department of Physical Education and Sports, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu, India

Dr. D Jim Reeves Silent Night

Director of Physical Education, Aditanar College of Arts and Science, Tiruchendur, Tamil Nadu, India

Effect of cognitive and somatic techniques on volleyball skill performance

T Sundararaj and Dr. D Jim Reeves Silent Night

Abstract

The purpose of the study was to find out the effect of cognitive and somatic techniques on Volleyball skill performance. To achieve the purpose, 45 Volleyball players were selected from various schools in Tirunelveli District and their age is ranged between 15 to 17 years. The selected subjects were randomly assigned into three groups namely Group I Cognitive techniques training, Group II somatic technique training and Group III Control group. Group I underwent 6 weeks cognitive techniques training, Group II underwent 6 week somatic technique training. The criterion variables chosen for this investigation are serving and passing and it was measured by using Brumback Volleyball service and bump to self tests were followed. The collected data from the three groups prior to and post experimentation were statistically analyzed by using dependent t-test and ANCOVA, to find out the significant difference between pretest and posttest among the selected three groups. Whenever a obtained 'F' ratio values was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. The level of significance was fixed at .05 levels, which was considered to be appropriate. It was concluded that there was significant difference exists between both experimental groups and control group. Cognitive techniques training group are found better in serving and passing when compared with somatic techniques training and control groups.

Keywords: Cognitive, somatic techniques training and volleyball skill performance

Introduction

Millions of people play volleyball across the world. In many countries, it has been ranked as one of the top-level competitive sport. William G. Morgan, an instructor at the Young Men's Christian Association (YMCA) in Holyoke, Massachusetts, invented volleyball in 1895. Volleyball players need well-developed muscular strength, power and endurance, speed, agility, and flexibility, and have a high level of jumping ability, fast reaction time and swift movements (She, 1999) [4]. Sports psychology deals with increasing performance by managing emotions and minimizing the psychological effects of injury and poor performance. Some of the most important skills taught are goal setting, relaxation, visualization, self-talk, awareness and control, concentration, confidence, using rituals, attribution training and periodization. Cognitive strategy that has been used in sports is termed association. Rushall (1984) [3] described this strategy as containing "developed, task-specific content". Cognitive training is widely practiced around the world and it seems effective in improving sporting performance. Some studies have focused on single psychological skill approaches (Devonport 2006) [1]. On the one hand, among sport performers and coaches, imagery is a popular and well-accepted cognitive strategy for enhancing various aspects of performance (Slimani, Chamari, Boudhiba, Cheour 2016) [5].

Purpose of the study

The purpose of the study was to find out the effect of cognitive and somatic techniques on Volleyball skill performance.

Methodology

To achieve the purpose, 45 Volleyball players were selected from various schools in Tirunelveli District and their age is ranged between 15 to 17 years.

Correspondence

T Sundararaj

Ph.D. Scholar, Department of Physical Education and Sports, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, Tamil Nadu, India

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Analysis of the data

Table 1: Summary of mean and dependent 't' test on serving and passing among experimental and control groups

Variables	Group	Mean		t - value
		Pre Test	Post Test	
Serving	Cognitive technique training	19.07	28.20	9.98*
	Somatic technique training	19.13	24.27	4.33*
	Control Group	19.20	19.80	1.79
Passing	Cognitive technique training	23.73	30.40	11.28*
	Somatic technique training	23.53	27.00	6.99*
	Control Group	23.27	23.93	1.67

*Significant at .05 level. Table value required for significance at .05 levels for 't' with df 14 is 2.14.

The table 1 shows that the obtained dependent t-test values between pre-test and post test means of experimental and control groups on serving are 9.98, 4.33 and 1.79 and passing are 11.28, 6.99 and 1.67 respectively. The table value required for significant difference with df 14 at .05 level is 2.14. Since, the obtained t-test value of both experimental groups is

greater than the tabulated t - value, it is concluded that cognitive technique and somatic technique training programme had significantly improved the performance of serving and passing and the control groups has not improved because they were not subjected to any specific training.

Table 2: Analysis of covariance (ancova) on selected skill performance variables of experimental and control groups

Variables	Adjusted Post Test Means			Source of Variance	Sum of Squares	df	Mean square	F - ratio
	Cognitive technique training	Somatic technique training	Control Group					
Serving	28.18	24.27	19.82	Between	524.47	2	262.23	48.14*
				Within	233.35	41	5.45	
Passing	30.29	26.99	24.05	Between	288.82	2	144.41	47.93*
				Within	123.54	41	3.01	

* Significant at 0.05 level. The table value required for significance at 0.05 level with df 2 and 42 is 3.22)

Table 2 shows that the obtained F-ratio value of serving is 48.14 and passing is 47.93 which are higher than the table value of 3.22 with df 2 and 42 required for significance at .05 level. Since, the value of F- ratio is higher than the table value

it indicates that there was significant difference exists between the adjusted post-test means of both experimental groups and control group on serving and passing.

Table 3: Scheffe's test for difference between the paired means of selected skill performance variables of school volleyball players

Variables	Mean Values			Mean Difference	CI Value
	Cognitive technique training	Somatic technique training	Control Group		
Serving	28-18	24.27		3.91*	2.17
	28-18		19.82	8.36*	
		24.27	19.82	4.45*	
Passing	30.29	26.99		3.30*	1.61
			24.05	6.24*	
	30.29	26.99	24.05	2.94*	

*Significant at .05 level

Table 3 shows that the adjusted post test mean differences on serving between cognitive and somatic technique training groups; cognitive technique training and control groups; and somatic technique training and control groups 3.91, 8.36 and 4.45 which are greater than the confidence interval value 2.17 and passing between cognitive and somatic technique training groups; cognitive technique training and control groups; and somatic technique training and control groups 3.30, 6.24 and 2.94 which are greater than the confidence interval value 1.61 which shows significant difference at .05 level of significance. It may be concluded from the results of the study

that there was a significant difference on serving and passing between cognitive and somatic technique training groups; cognitive technique training and control groups; and somatic technique training and control groups.

It was concluded that cognitive technique training programme is better than somatic technique training programme and control groups in improving serving and passing.

Discussion

The result of the study indicated that, the two experimental groups had achieved significant improvement on serving and

passing when compared to the control group.

The cognitive technique training programme is better than somatic technique training programme and control groups in improving serving and passing.

The results from this study were parallel with the results reported in the literature. Some evidence suggests that according to Slimani, Bragazzi, Tod, Dellal, Hue, Cheour, & Chamari, (2016) [6] reviewed adhering to Preferred Reporting Items for Systematic reviews and Meta-Analysis guidelines, examined the effects of cognitive training strategies on motor and positive psychological skills development in soccer performance and identified the potential moderators of the “cognitive training–soccer performance” relationship.

Murphy, (2006) [2] examine the effects of a cognitive specific imagery intervention on the soccer skill performance of young athletes aged 11--12 and 13--14 years and determine if such performances vary with age and gender.

Conclusion

There was a significance improvement on serving and passing due to the cognitive technique training practices among school Volleyball players.

There was a significance improvement on serving and passing due to the somatic technique training practices among school Volleyball players.

There was significance difference among between cognitive and somatic technique training groups and control group on serving and passing.

Cognitive technique training has better when compare with somatic technique training and control group on serving and passing school volleyball players.

Control group was no significance difference on serving and passing among school volleyball players.

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