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Investigation of skill training with and without visual training in cricket

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Abstract

The purpose of this study was to investigate the effects of skill training with and without visual training on batting performance of Cricket players. To achieve the purpose of the study, thirty six (n=36) men Cricket players from Tirunelveli District under 19 team players, Tirunelveli, Tamilnadu, India were selected as subjects at random and their age is ranged between 16 to 19 years. The selected participants were randomly (simple random sample) assigned to one of three groups of twelve (n=12) each, such as experimental group I, experimental group II and control group. The group I (n=12) underwent skills training with visual training, and group II (n=12) underwent skills training without visual training for a duration of 12 weeks and the number of sessions per week is confined to three days, in addition to the regular schedule and group III (n=12) acted as control, who is asked to refrain from any special training except their leisure time pursuit. Members of these groups will consist of healthy men Cricket players who have represented the inter district cricket tournament. Prior to enrollment in the study, participants were informed of all possible risks involved in this study, and signed an informed consent form previously. Batting skill was selected as dependent variable for this study and it was tested by using expert rating method. Skill training with and without visual training was selected as independent variable for this study. After determining the assumptions for computing ANCOVA have been met with the pre data analysis, the univariate ANCOVA statistical output was examined. Then, providing the ANCOVA result was statistically significant, the univariate results were examined for each dependent variable. For the significant univariate results, the post hoc comparisons were performed to identify where the differences resided. The pairwise comparisons statistic was used for the post hoc results. It was concluded that, the skill training with visual training had significantly improved the participants' batting performance. Also the skill training without visual training had significantly improved the participants' batting performance. Also the skill training with visual training and skill training without visual training had significant difference towards improving the participants' batting performance. Finally skill training with visual training outperformed the skill training without visual training on participants' batting performance among cricketers aged 14 to 19 years.

Keywords: skill training, without visual, cricket

Introduction

The velocity of balls bowled by a fast bowler ranges from 140-150 kmph. The target object, in this case the ball when it reaches velocity that great, exposes the constraints of the human visual system. In most such sports the coach's advice is to "keep your eyes on the ball and hit through the line of the ball" however, when the ball moves fast, this strategy may not always be possible or appropriate. The factors contributing to exceptional batting and the qualities that define the batting expertise need to be investigated. These include personal, sociological, demographic and developmental factors, deliberate practice, a superior visual function, a strong psyche, superior cognitive skills, superior visual perceptual skills, technical proficiency and superior morphological and physiological attributes (Abernethy, B. 1987).

Among these, visual perceptual factors are one of the most important for cricket batting. Some of the important visual skills required for cricket batting are: static and dynamic visual acuity, depth perception, eye movements, peripheral vision, accommodation and eye-hand coordination. It is established that highly skilled players have better visual abilities than non-athletes. The consensus is that expert and novice athletes are not characterized by differences in basic visual skills (Christenson, G.N. & Winkelstein, A.M. 1988, Kluka, D.A. Love, P.L.

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Kuhlman J, Hammach G, & Wesson M. 1996) but several of the recent studies show that visual training can improve sports performance (Starkes JL. & Deakin J. 1984). Although these studies highlight the potential of perceptual training programs, various shortcomings in the literature prevent a clear evaluation of their usefulness.

Statement of the problem

The purpose of this study was to investigate the effects of skill training with and without visual training on batting performance of Cricket players.

Methodology

To achieve the purpose of the study, thirty six (n=36) men Cricket players from Tirunelveli District under 19 team players, Tirunelveli, Tamilnadu, India were selected as subjects at random and their age is ranged between 16 to 19 years. The selected participants were randomly (simple random sample) assigned to one of three groups of twelve (n=12) each, such as experimental group I, experimental group II and control group. The group I (n=12) underwent skills training with visual training, and group II (n=12) underwent skills training without visual training for a duration of 12 weeks and the number of sessions per week is confined to three days, in addition to the regular schedule and group III (n=12) acted as control, who is asked to refrain from any special training except their leisure time pursuit. Members of these groups will consist of healthy men Cricket players who have represented the inter district cricket tournament. Prior to

enrollment in the study, participants were informed of all possible risks involved in this study, and signed an informed consent form previously. Batting skill was selected as dependent variables for this study and it was tested by using expert rating method. Skill training with and without visual training was selected as independent variable for this study. After determining the assumptions for computing ANCOVA have been met with the pre data analysis, the univariate ANCOVA statistical output was examined. Then, providing the ANCOVA result was statistically significant, the univariate results were examined for each dependent variable. For the significant univariate results, the post hoc comparisons were performed to identify where the differences resided. The pair wise comparisons statistic was used for the post hoc results.

Analysis of Data

Table I presents the pre and posttest means, standard deviations and dependent 't' test values on Batting Performance of experimental and control groups.

Table II presents the results of the univariate ANCOVA tests on Batting Performance of experimental and control groups.

To find out which of the three paired means had a significant difference, the Scheffe's post-hoc test was applied and the results are presented in Table III.

The pre and posttest means of skill training with visual training and skill training without visual training groups and control group on batting performance of Cricket players.

Table 1: Means, standard deviation and dependent 'T' test values on batting performance of experimental and control groups

Tests	Skill training with Visual Training Group		Skill training without Visual Training skill Group		Control Group	
	Mean	SD	Mean	SD	Mean	SD
	Pre test	9.42	1.38	9.50	1.31	8.83
Post test	15.75	1.36	13.92	1.08	9.50	0.90
T-Test		12.73*		14.12*	1.77	

*Significant at. 05 level. The Table Value required at. 05 level with df 11 is 2.20

Table 2: results of analysis of covariance on batting performance among experimental and control groups

Adjusted Post Test Means			Sources of Variance	Sum of Square	DF	Mean Squares	F-ratio
Skill training with Visual Training Group	Skill training without Visual Training skill Group	Control Group					
15.71	13.85	9.61	Between	221.93	2	110.97	
			Within	38.75	32	1.21	91.64*

*Significant at. 05 level. The Table value required at. 05 level with df 2 & 32 is 3.29.

Table 3: Scheffe's test for the differences between the adjusted post test paired means of batting performance

Adjusted Post Test Mean			Mean Differences	Confidence Interval
Skill training with Visual Training Group	Skill training Without Visual Training Group	Control Group		
15.71	13.85	--	1.86*	
15.71	--	9.61	6.10*	1.15
--	13.85	9.61	4.24*	

*Significant at. 05 level.

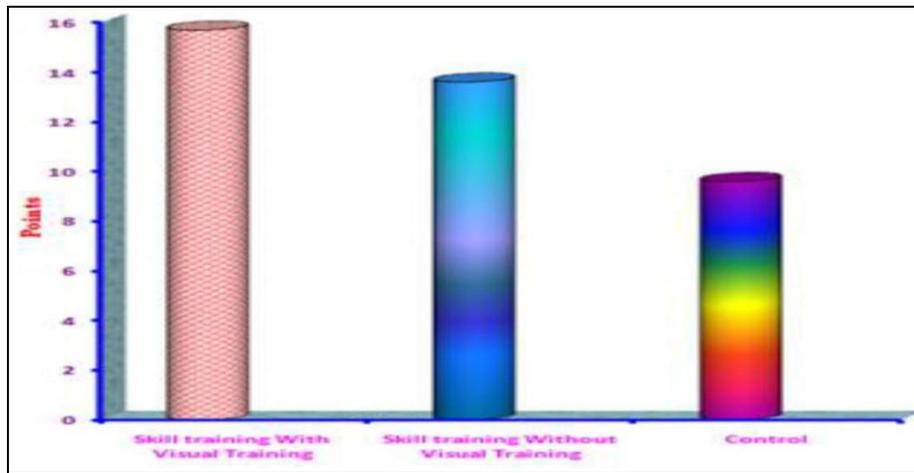


Fig 1: Adjusted Post Test Mean Values of Experimental and Control Groups on Batting Performance

Discussion on Findings

The result indicates that the control group does not show any significant difference on batting performance. The results of batting had shown significant improvement due to training effects of skill training with visual training and skill training without visual training. The effect of the skill training with visual training was much greater than skill training without visual training on batting of the Cricket players. The results of this investigation are also supported by the following research findings.

These findings are consistent with the literature review by Cohn TE, & Chaplik DD. (1991). Which revealed that a constructive visual training program improves the basic visual skills in athletes. Several types of eye movements are used to view moving objects and are important to understand what events in sports may and may not be seen Kluka, D. A. (1991).

The results of this study are supported by the work of West and Bressan (1996), who indicated positive effect on the performance of cricketers to judge the length of ball after a specific visual training program. The main reason for the average performance for the placebo and the control group could be the lack of attention given to developing important visual skills. The short saccadic latencies distinguish a good batsman from poor Land M, & McLeod, P. (2003).

Kluka DA. (2000) indicated that, good balance, footwork, anticipation, and eye-hand co-ordination constitute batting expertise. Vision steers and guides body movements. Similarly, vestibulo-ocular movement's co-ordinate eyes with head motion and assist in balance. This may explain why the experimental group outperformed the other two groups.

De Teresa, T. (1992) explained it should hold true that if the visual system is at a higher level, the overall performance of the player will be at a higher level as well.

When the batsman plays a shot such as pull, hook, square cut or drive, he must judge the horizontal (speed) and the vertical (bounce) position of the ball within a few milliseconds and also at the same time needs to view the gaps to hit the ball, thus stating importance of saccades in cricket. The results of our study showed improvement in the horizontal and vertical saccade in the experimental group ($p < 0.001$). Saccades can reposition eyes requiring velocities exceeding 700°/sec (Carpenter, R. H. S. 1998).

Research has also shown that different head or eye movement strategies are used in fast ball sports (De Teresa, T. 1992).

It also supports the view that depending on particular sport a specialization of visual system is possible. These findings are

consistent with the work of De Teresa (1992), which showed that specialization of the visual system occurs with the nature of a particular sport.

It is inferred from the literature cited above and from the result of the study indicated that, the eye movements of players have been measured to determine visual search strategies used in sports (Laurent, M. Ripoll, H. & Montagne, G. 1993). The assumption is that when a performer looks or fixates the eyes, information is gathered, which could be the swing of the bowler's arm, the grip on the ball and the time of release. This helps the batsman in positioning himself to face a particular delivery. Hence it was concluded that, skill training along with visual must be practiced regularly under good supervisor to enhance the batting performance of the cricketers.

Conclusions

The following conclusions were derived from the present study.

1. The skill training with visual training had significantly improved the participants' batting performance.
2. The skill training without visual training had significantly improved the participants' batting performance.
3. The Skill training with visual training and skill training without visual training had significant difference towards improving the participants' batting performance.
4. Skill training with visual training outperformed the skill training without visual training on participants' batting performance among cricketers aged 14 to 19 years.

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