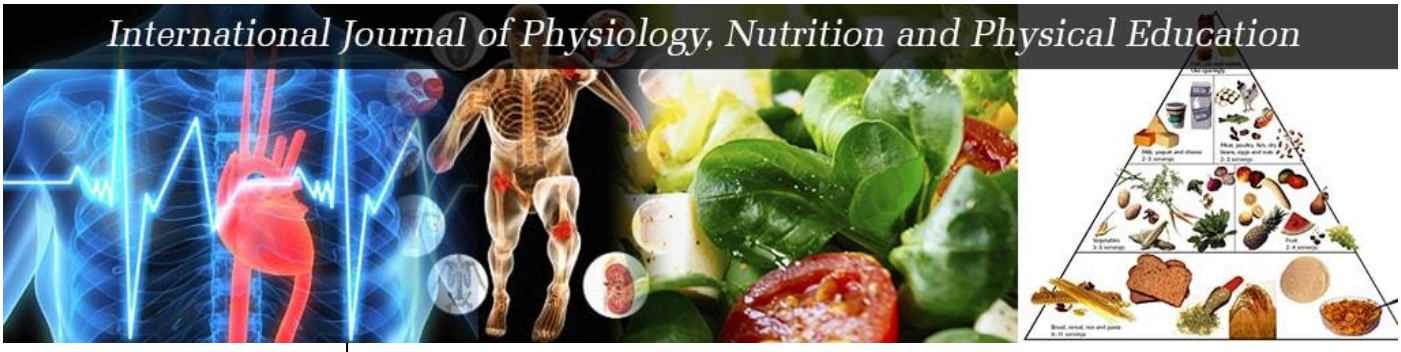

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Effect of 8 - weeks coordination training on visual pursuit of young cricket players

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Abstract
The purpose of the study was to investigate the effect of 8- weeks coordination training on visual pursuit of young cricket players. A total of 16 male (8 players in each group) cricket players age ranged from 12-15 years with mean & SD 14.23±1.67 years, from LNIPE cricket nursery, Gwalior selected as subjects for the study. The purposive sampling technique was used to attain the objectives of the study. Vienna test system (VTS), a leading computerized psychological assessment tool was used for measuring Visual Pursuit. The Vienna Test System SPORT is perfectly designed for sports psychology assessment. The psychometrically valid tool for profile analysis, talent assessment and development of training plans gives players and athletes a clear picture of their sports psychology profile – in terms of both skills and personality (Vienna Test System sports, 2017). Researcher analyzed the visual pursuit (LVT) in which how consistently in term of the same latent ability dimension is assessed in all respondents. Pre test post test control group design was adopted for this study. The training programme was carried out for a total duration of eight weeks. All subject, after having been informed objective of the study, gave their consent and volunteered to participate in this study. The training was carried out thrice a week on alternate days of the week for each group. ANCOVA was applied as statistical technique to analyze the effect of 8-weeks coordination training on visual pursuit, the alpha level was set at 0.05. Statistical analysis of the data revealed there is significant difference in LVT as the f value found significant ($p<0.05$), Hence it may be inferred that 8- weeks coordination training is effective for improving visual pursuit of young cricket players.

Keywords: Coordination training, Vienna test system, visual pursuit, cricket

Introduction
Sport is conceived as a psycho-physical phenomenon in the modern times. When one analyses the sports-skills, almost all motor movements are found to be backed by one or the other psychological factor (Dutta & Singh, 2013) [1]. Sports being mainly a movement oriented enterprise, it will be highly pertinent to go for the establishment of psychomotor profiles of the young people as primary steps towards their future progress in sports. According to Kandel, Schwartz & Jessel (2000, 318) [4], When a player recognizes an approaching ball, it requires usage of visual senses and calculation of the velocity and direction of the ball. As the athlete's eyes are calculating and reading the speed, size, and direction of the game object, proprioceptive information allows him to be aware of the position of his arms, legs, and trunk in space.

In cricket expert batsmen have shown a persistent capability to use early sources of information to aid shot selection which other skill groups are not attuned to (Muller *et al*, 2006) [8]. Coordination can be defined as the ability of fast and exact control and regulation of movements, it denotes body mind relationship. Participation in physical activities is very important to increase the coordinative abilities. Coordination is often used as an indicator of objective motor behaviour, since it contributes strongly to the explanation of total motor performance (Mechling, 1999) [1].

To actually catch a ball, one must combine the eye's inputs with activation of the body's motor system to get the hands in the correct place. This complex process requires a set of visual-motor skills in the form of depth perception, saccades and pursuits, eye hand co-ordination, vergence, peripheral awareness and visual reaction time. These skills are amenable to training and therefore can be predicted to provide the athletes with a potential advantage over their counterparts.

Since, vision resides in the brain, any evaluation of the visual system without considering its effects on cognition and movement, is deemed incomplete. In totality, vision is a learned complex and developed set of functions that involve a multitude of skills and therefore, can be taught through specific training of the visual skills through an individual specific program (Khanal, 2015) [5].

Materials and methods

Selection of Subjects

To systematize the study, subjects were divided into two groups (experimental group and control group). A total of 16 male (8 players in each group) cricket players age ranged from 12-15 with mean & SD 14.23±1.67 years, from LNIPE cricket nursery, Gwalior selected as subjects for the study. The purpose of the research was explained to all the subjects and subjects were motivated to put their best during each trial.

Selection of Variables

- Independent Variable
  - 8- Weeks Coordination Training
- Dependent variable
  - Visual Pursuit(LVT)

Criterion Measures

Visual Pursuit was measured through Vienna Test System (VTS). The Vienna test system is leading computerized psychological assessment tool. VTS ensures the highest possible level of objectivity and precision, including aspects that cannot be measured by traditional paper-and-pencil tests. The scoring of test results is fast and accurate.

Table 1: Criterion Measures

Variable	Test	Unit
Visual Pursuit	Vienna Test System S3 (Screening form with18 items)	Scores

Experimental Design

Pre test post test control group design was adopted for this study. Further the subjects are divided into two groups experimental and control group. The experimental group participated in training program. No treatment was given to control group. The training programme was carried out for a total duration of eight weeks. Duration of training programme was of 45 minutes.

Administration of Training Programme

The training schedule prescribed by the researcher was applied to experimental group and training was personally supervised by the researcher. The training was carried out for a period of eight weeks, three days a week excluding the time consumed for conducting per-test and post test. The scholar demonstrated the training for experimental group. Each subject of the experimental group performed their respective training. Sufficient and required recovery was provided between the tests. The scholar demonstrated each exercise with its movement structure. The control group was not allowed to undergo the training program. From the first week to the eighth week, the volume of training load and training increased gradually for the experimental group

Table 2: Exercise Protocol

Exercise	Week 1 and 2	Week 3 and 4	Week 5 and 6	Additional progression	Week 7 and 8
Warming up(in min)	3	3	3		3
Ball Drops Catches	30	2x20	2x30		3x20
Alternate Hand Wall Drop Catch	30	2x20	2x30		3x20
Mirror drill	30sec	45 sec	60 sec		75 sec
Push up and catch	15	2x10	3x10		2x20
skipping	30	50	70	variation	90
Cool down(in min)	3	3	3		3

Administration of Test

Visual pursuit test

Purpose: To measure the visual pursuit

Test form: S3 (Screening form with18 items)

Testing duration: 9 minutes

Administration of the test

Instruction and practice phase: On the first instruction screen the respondent is informed that a picture will appear when he presses the red and green buttons simultaneously. After he has viewed a sample picture, the task and the method of response are explained. Before the respondent presses the red and green buttons to move on to the practice phase, he is again informed that he should work as quickly as he can, while attempting to avoid any errors. The practice phase consists of eight easy items; it is automatically terminated if more than two errors are made.

Test phase: The respondent presses the red and green buttons simultaneously to end the practice phase; the test phase then starts automatically. Depending on the test form selected, 80, 40 or 18 test pictures are presented. As in the practice phase, the respondent can work at his own pace. However, items to which the respondent takes too long to respond (in excess of between 4 and 7 seconds, depending on the item) are not included in the calculation of the main variable *Score*, even if they are answered correctly. Once given, an answer cannot be corrected.

Scoring

Interpretation of the test results is based on the main variable Score. This variable takes account of both the speed and accuracy of the test results. High scores reflects fast and accurate perception in context of obtaining an overview. By altering the time the difficulty of items can be set at any required level. By default the time limits have been set with the aim of making the items as similar as possible in difficulty.

Reliability: 0.92

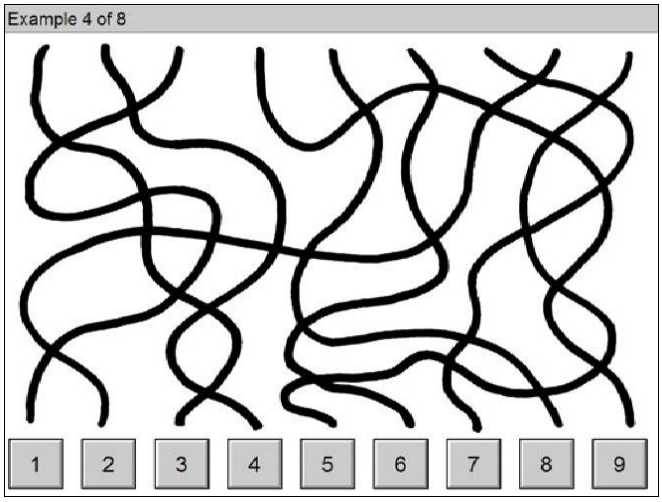

Fig 1: Screenshot of visual pursuit test on Vienna test system

Statistical Technique

The differences in the means of experimental group and a control group for reaction time was tested for significance by applying Analysis of co-variance (ANCOVA), and the level of significance chosen was 0.05.

Results

The main purpose of the study was to see the effect of 8 Weeks coordination training on visual pursuit of young cricket players. To analyse the effects of coordination training on visual pursuit ANCOVA was applied.

In this study effect of coordination training was analysed on visual pursuit. Abbreviation of visual pursuit is used in result i.e. LVT

Different types of descriptive statistics such as mean and standard deviation was computed to describe each variable statistically. The level of significance was set at 0.05. Its results have been depicted in following tables

Table 3: Descriptive Statistics of Visual Pursuit (LVT)

Group	Mean		SD	
	Pre	Post	Pre	Post
Experimental Group	9.5	14.3	1.40	2.27
Control Group	10.2	10.8	1.62	2.23

Table 3 indicates mean and standard deviation of Visual Pursuit (LVT) of experimental and control group. Mean and SD of pre test and post test of experimental group is 9.5 ± 1.40 & 14.3 ± 2.27 respectively and Mean and SD of pre test and post test of control group is 10.2 ± 1.62 & 10.8 ± 2.23 respectively.

Table 4: Levene's Test of Equality of Error Variances

F	df1	df2	p-value
.172	1	14	.685

To test the equality of variances LVT, Levene's test was used. The F-value was insignificant as the p-value (.685) was more than 0.05. Thus the null hypothesis of equality of variances might be accepted, and it was concluded that the variances of the two groups were equal. The results were presented in Table.

Table 5: ANCOVA Table for the Data on Visual Pursuit (LVT)

Source	Type III Sum of Squares	df	Mean Square	F	p-value
Pre LVT	0.776	1	0.776	4.259	.721
Group	43.205	1	43.205	12.084	.018
Error	75.974	13	5.844		
Corrected Total	125.750	15			

Table 5 shows the F- value for Pre LVT is insignificant as p-value (0.721) is greater than 0.05. It shows that the initial conditions of both the groups are same.

The f- value for comparing the adjusted means of the two groups (experimental and control group) during post testing. Since p-value of statistics is 0.18 which is less than 0.05, it is significant. Thus the null hypothesis of no difference among the post means of the data on LVT of both groups may be rejected at 5% level.

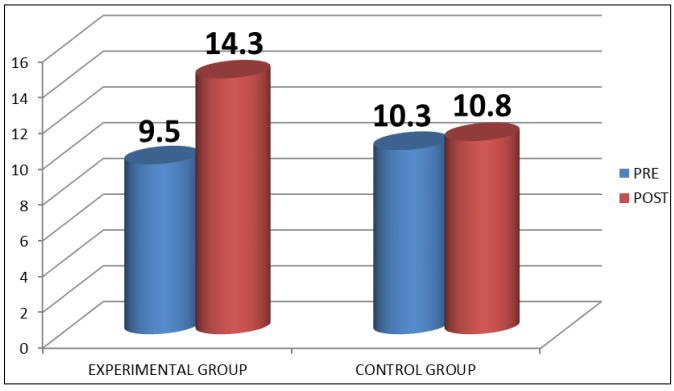

Fig 2: Graphical representation of pre test scores and post test score of mean visual pursuit (LVT)

Discussion and findings

From the above results it may be concluded that coordination training of 8-week is effective to improve visual pursuit. LVT showed significant results. So form this it is inferred that if we provide 8- week Coordination training to young cricketer than there would be significant improvement in their visual pursuit.

Various studies supported the finding of the study i.e. Visual search strategies refer to the way that the eyes move around the field in an attempt to direct visual attention towards relevant sources of information. Since almost 80% of the entire input that goes to the brain, comes from the eyes, it can be said that vision is one of the most important factors playing a role in sport performance (Hodge, Atkinson, Gill, Crelier, Marret & Pike, 1999) [3]. Extraordinary sport performance depends on successfully using all available visual information. As such, there has been a growing acceptance that perceptual skill precedes and determined skilful actions in sport (Harris & Jenkin, 1998; Williams *et al.*, 1999) [2, 9]. Through training exercises, the player can guide his eyes to focus, locate and centre properly to reduce fatigue. The performance of the cricket and soccer player is based on the ability of the visual system to respond quickly and effectively to visual cues in many skilled motor performances (www.cricketfitness.com, 2007).

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