



ISSN: 2456-0057  
IJPNPE 2019; 4(1): 252-254  
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www.journalofsports.com  
Received: 10-11-2019  
Accepted: 14-12-2019

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## Effects of training on psychophysical psychomotor abilities and skill performance of field hockey players

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### Abstract

Psychomotor development enables them to cultivate their perceptive capacity, to create and develop their body image, and express themselves through creative action and emotions. Thanks to psychomotor development, the children establish the foundations of the entire educational process. The psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of the motor-skill areas. Thus, psychomotor skills range from manual tasks, such as digging a ditch or washing a car, to more complex tasks, such as operating a complex piece of machinery or dancing. The present study was to find out the effects of psychomotor abilities and skill performance of field hockey players. The selected Subjects were the participants of inter school level students of Hockey tournament and their ranged between 12 and 14 year and pre and post-test random group design. Eighty students were randomly selected, they undergone progressive resistance training group (PRTG). In testing the significance of mean difference on post-test among the students. The whole students were taken as a Progressive Resistance Training. Group Progressive Resistance with Pilates Training Group and they were psychologically motivated as shown in methodology. The result indicates that the mean differences on criterion variables used in the study at the end of the treatment was found to be statistically significant. Thus it was found that there was a significant mean difference among the students in the variables used in the study.

**Keywords:** Coordination, psychophysical psychomotor, skill performance, hockey players

### Introduction

Hockey is a difficult sport for analytics. Like soccer and basketball, it is a fluid game, a so-called “continuous” game where there are many moving pieces. Also, what happens “off the puck” is not typically measured; these difficult to detect actions can have a profound impact on the results of a game. Possession also makes hockey a difficult sport. Compared to soccer and basketball, it is more difficult to retain possession in hockey. When the hockey players easily control possession, then it is more difficult to devise and implement offensive tactics. On the other hand, data are more plentiful in hockey now than ever before, and more detailed data is on the imminent horizon. The new data will take the form of player tracking data which will require data science skills on the part of analysts. One way of looking at these difficulties and challenges is that there are opportunities in hockey analytics. The game is played in many countries, and hockey is one of the six wealthy big sports. This suggests that there should be future resources and interest for making meaningful contributions in hockey analytics.

### Methodology

#### Selection of subjects

To fulfil the purpose of the study, the school male Hockey students from Madurai district were asked to assemble in a hall. The Researcher explained the proposed research work, nature of the study and subjects involved. All the players volunteered to serve as subjects out of which 80 (N=80) Hockey players were selected at random and their age ranged between 12 and 14 years. The subjects were segregated into four equal groups consist of 20 each by adopting random procedure.

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**Selection of variables**

To assess the change as a result of psychomotor training over skills in the game of hockey, the following skills were selected as criterion variables coordination and reaction time.

**Testing procedure**

The researcher explained the purpose of the training programmes to the subjects who are participating in the study. For the collection of data, the researcher explained the procedure of the test for coordination and reaction time. The subject had a standard warm-up prior to the test, they had been familiarized with the test protocol.

**Training procedure**

During the training period, the experimental groups underwent their respective training programme three days per week and selected skill training programme for two days per week over twelve weeks. The work lasts from 45 to 60 minutes tentatively including warming up and warming down periods. The training programmes were carried out on a 400 mts track during the morning hours. The subjects underwent the respective programmes as per the schedules under the supervision of the researcher. Attendance was maintained and calculated for all the training groups separately by dividing the total number of training sessions by the number of sessions they attended. All the subjects who are involved in the training programmes, were questioned about their health

status throughout the training period. None of them reported any injury like sprain, strain, muscle cramp etc., however, muscle soreness was reported in the early weeks but it has been subsided later.

**Statistical technique**

The data collected from the four groups on the selected variable criteria were analyzed with dependent t-test to find out the significant improvement if any, due to the influence of the selected training means. The concept of magnitude of improvement (MI) was also used to find out the percentage of the improvement of each criterion variable due to the influence of independent variables. Further, the concept of analysis of covariance (ANCOVA) was also used to find out the significant difference if any, among the experimental groups after the training programs. Since, four groups were compared whenever they obtained F-ratio for the adjusted post-test was found to be significant, the scheffe’s test was used as a post-hoc test to study the paired mean differences. The level of significance was fixed at 0.05 level of confidence to test the hypotheses.

**Results and findings**

The statistical analysis comparing the initial and final means of the Effects of psychophysical and psychomotor training on selected skills in field hockey of college level hockey players was presented in the following tables.

**Table 1:** Analysis of covariance among psychophysical psychomotor training and control group on coordination

Test	Psychophysical training group	psychomotor training group	Combined group	Control group	Source of variance	DF	Sum of squares	Mean squares	F-ratio
Pre-test	9.10	9.15	9.20	9.25	B.G	3	0.25	0.08	0.15
					W.G	76	43.30	0.57	
Post-test	9.20	10.20	11.50	9.15	B.G	3	73.04	24.35	33.07*
					W.G	76	55.95	0.74	
Adjusted Post Mean	9.22	10.21	11.49	9.13	B.G	3	72.80	24.27	33.72*
					W.G	75	53.97	0.72	

\*Significant at 0.05 level of confidence

Table 1 shows the obtained ‘F’ values on pre-test, post-test, adjusted post-test means of psychophysical training group, psychomotor training group and combined group and Control group. The pre-test means on s training group coordination of psychophysical training group, psychomotor training group and combined group and Control group were 9.10, 9.15, 9.20 and 9.25 respectively. The ‘F’ value observed for the pre-test on coordination was 0.15. It fails to reach the table value of 2.72 for degree of freedom 3, 76 at 0.05 level of confidence. Based on the results it was conformed that the mean differences among the groups of psychophysical training group, psychomotor training group and combined group and Control group. On coordination before the start of the respective treatments were found to be insignificant. The post-test means on scooping of psychophysical training group, psychomotor training group and combined group and Control group. Were 9.20, 10.20, 11.50 and 9.15 respectively.

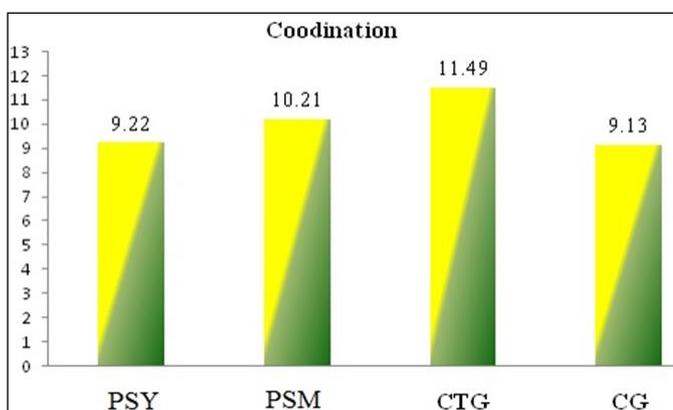
The ‘F’ value observed for the post-test on coordination was 33.07. It was greater than the table value of 2.72 for degree of freedom 3, 76 at 0.05 level of confidence. Since the observed F-value on adjusted post-test means among the groups namely psychophysical training group, psychomotor training group and combined group and Control group on coordination was highly significant as the value was higher than the required table value of 2.72. Thus the results obtained proved that the trainings on scooping produced significant improvements among the experimental groups.

The adjusted post-test means on coordination of psychophysical training group, psychomotor training group and combined group and Control group. Were 9.22, 10.21, 11.49 and 9.13 respectively. The ‘F’ value observed for the adjusted post-test on coordination was 33.72. It was greater than the table value of 2.72 for degree of freedom 3, 75 at 0.05 level of confidence. Since the observed F-value on adjusted post-test means among the group’s namely psychophysical training group, psychomotor training group and combined group and Control group. On coordination was highly significant as the value was higher than the required table value of 2.72. Thus the results obtained proved that the trainings on coordination produced significant improvements among the experimental groups. Since significant differences were recorded, the scores were further subjected to statistical treatment using scheffe’s post hoc test and the results which were presented in the table 2

**Table 2:** Scheffe’s post hoc values of adjusted post-test mean difference on coordination

PSYPTG	PSYMTG	COMTG	CONT G	MEAN DIF	CI
9.22	10.21			-0.99	0.87
9.22		11.49		-2.28*	
9.22			9.13	0.08	
	10.21	11.49		-1.29	
	10.21		9.13	1.07*	
		11.49	9.13	2.36*	

Table 2 shows the significant difference of paired adjusted post-test means of psychophysical training group, psychomotor training group and combined group and Control group. On coordination. The obtained mean difference between the psychophysical training group and psychomotor training group, psychophysical training group and Combination group, psychomotor training group and Combination group. Psychophysical training group and Control group, psychomotor training and Control group, Combination training and Control group were 9.22, 10.21, 11.49 and 9.13 respectively. The required confidence interval value was 0.87. Since the obtained mean differences between the Psychophysical training group and psychomotor training group, Psychophysical training group and Combination group, psychomotor training group and Combination group. Psychophysical training group and Control group, psychomotor training and Control group between Combination training and Control group were greater than the obtained confidence interval value on scooping, it was concluded that there were significant difference in the effects on scooping. The Graphical Representation of the Adjusted Post Test Mean Values of Experimental Groups and Control Groups on coordination are presented in Figure 1.



**Fig 1:** Adjusted mean values of aerobic training group, anaerobic training group, co-ordination training group and control group on coordination

### Conclusion and recommendation

Psychomotor training is an important component in the development and maintenance of fitness. According to this study the research scholar investigated to find out this study psychophysical, psychomotor and combination training better improvement in field hockey skills. The experimental groups namely, psychophysical, psychomotor and combination training training group had significantly psychomotor variables on coordination. Significant differences in achievement were found among psychophysical, psychomotor and combination training training group all the selected criterion variables such as coordination. The present study, it may be concluded that the were improved psychomotor variables on coordination. By psychomotor training group. Hence, trainers and Physical Educators could adopt such training to improve psychomotor training group among their athletes. A similar study may be conducted by selecting on physiological and other performance factors as criterion variables.

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