Effect of Kinesthetic Mental Imagery Training on Hitting Performance of Hockey Players

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ABSTRACT

The study aimed at studying the effectiveness of Kinesthetic Mental Imagery on Hitting skills of Hockey players. Thirty subjects were randomly selected who had general practice of around 2 years and were aspirants for university participation. The subjects were randomly segregated into two groups. The Kinesthetic mental imagery training was given to the subjects for 6 weeks and their hitting performance was recorded. ANCOVA was used to eliminate the effect of initial differences and the findings reveals that after 6 weeks of training there was significant differences between the Treatment and Control group. The study concludes that 6 week Kinesthetic mental imagery training can be beneficial to hockey players and must be clubbed with regular practice.

Key word: Kinesthetic Mental Imagery, Hockey, Hitting

I.INTRODUCTION

In the field of competitive sports the athletes who were physically strong, had more coordination, able to move faster were considered to be more talented than their opponents but the present scenario has changed and a top level the physical abilities of athletes are very similar. The main thing that differentiates them is their mental ability. This has provoked a numerous researches in the field of Psychology (Neuman, 2010). The use of mental imagery for enhancement of physical skill is now new but the application of the same in Sports Psychology is comparative gaining high as many Olympic athletes were found to be beneficial from this method (MacIntyre & Moran, 2007; Orlick & Partington, 1988).The psycho-neuromuscular theory suggests that during imagination of any task localized muscle movement of very low magnitude occurs and this movement is similar to that of

actual movement. The positive impact of Kinaesthetic Mental Imagery is reflected on many sports skills but very limited researches have been carried out in the field of discrete skills of hockey.

Research Questions:

Can kinaesthetic mental imagery training improve the hitting performance of Hockey players?

OBJECTIVE:

To evaluate the effectiveness of kinaesthetic mental imagery training programme in improving hitting performance of hockey players

Hypothesis:

There will be significant difference in mean hitting performance between Kinaesthetic Mental Imagery training group and Control Group.

$H_{0(\text{Hitting Performance})}$: μ_{Adj}-Po-Kinaesthetic Imagery TrainingGroup = μ_{Adj}-Po-Control Group

II.METHOD

SELECTION OF SUBJECT

For the purpose of the study 15 Hockey players (20.5 ± 1.15) were selected randomly from University aspirants (Approx. training age of 2 years). They were randomly divided into two groups. The treatment (Experimental & Control) groups were also assigned randomly to minimize the effect of extraneous variables.

EXPERIMENTAL DESIGN AND PROTOCOL

For the purpose of the study *Pretest-Posttest Randomized groups design* (Thomas, Nelson, & Silverman, 2005) was used. The treatment was imparted for 6 weeks, with a daily (excluding Saturday &Sunday) 25-30 min session by the researcher. During testing three trails were provided and the best score was considered. ANCOVA (Verma, 2009) was applied and level of significance was set at 0.05. SPSS 20 (Trail Version) was used for the analysis of the data.

III.RESULTS

ANCOVA has certain assumption which needs to be fulfilled before proceeding further. If assumptions are not fulfilled then the validity of the findings gets reduced. The major assumptions are and its tests are mentioned below:

> The assumption of **Outlier**   : Tested through *Box-Plot Test*
>
> The assumption of **Normality**   : Tested through *Saprio-Wilk's Test*
>
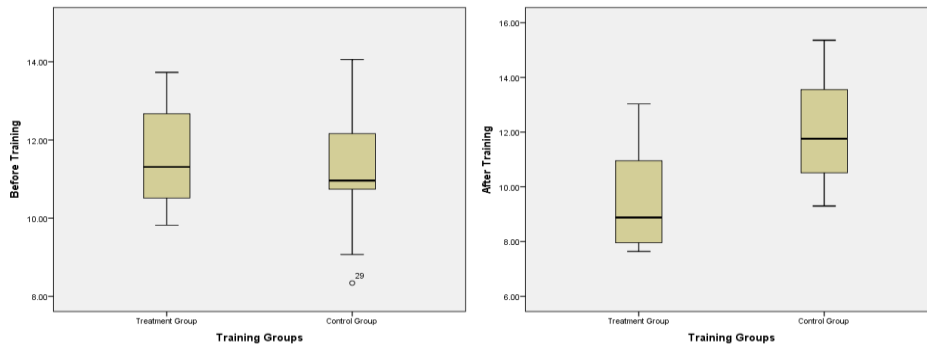> The **Homogeneity of Variance**   : Tested through *Levene's Test*

Figure 1: Box Plot test showing outliers

It is clear from the graph that none of the group had any significant outliers. Though the data of Control Group (Before training) holds one outliers but was not significant enough.

Table 1: Saprio-Wilk's Test to check normality of data

Training Groups		Shapiro-Wilk		
		Statistic	df	Sig.
Before Training	Treatment Group	.928	15	.259
	Control Group	.970	15	.865
After Training	Treatment Group	.884	15	.054
	Control Group	.939	15	.375

The data is said to be normal if the Shapiro-Wilk test output is not significant. From table 1 it is evident that the data of all the groups not significant as the obtained sig. values are more than 0.05. Hence, the data for all the groups are normal.

Table 2

Levene's test for equality of variance among groups

F	df1	df2	Sig.
.076	1	28	.785

Levene's test for equality of variance depicts that the test statistic was not significant at 0.05 level of significance as the obtained significance value was greater than 0.05. Thus it concludes that there is equal variance among groups and performing of ANCOVA is optimally valid.

Table 3: Descriptive analysis of Training Groups before and after the Training

	Before Training		After Training	
	Treatment Group	Control Group	Treatment Group	Control Group
Mean	11.54	11.24	9.56	12.14
Std. Deviation	1.32	1.43	1.81	2.04

Table 3 reveals that the groups were similar before training and after the training the performance of treatment group improved (as less timing resembles better performance)
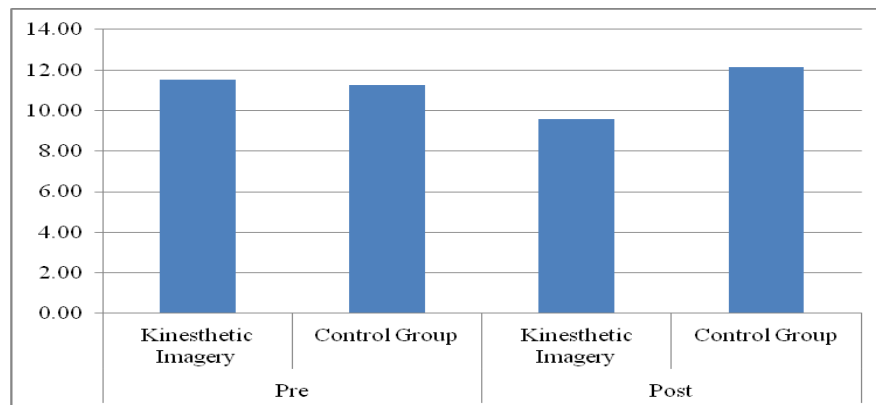

Figure 2: Mean hitting performance of Treatment and Control Group

Table 4: Analysis of Covariance for post test data on Hitting performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
KI_Pre	4.431	1	4.431	1.199	.283
Group	52.463	1	52.463	14.202	.001
Error	99.739	27	3.694		
Total	3686.864	30			

Table 4 denotes that the performance of the groups did not differed significantly before commencement of training as the p-value for KI_Pre is more than 0.05. This implies that selection of groups were proper. Further, there exists a significant difference in post test result of experimental group and control group, as the obtained p-value (0.001) is less than 0.05.

IV.DISCUSSION

From the findings it is very clear that the 6 week Kinesthetic mental Imagery training helped in improving the hitting performance among hockey players of University level. All the bodily movements are ultimately controlled by the brain and mental imagery helps in mental practice of the skill. This develops a blueprint in the brain and on future instances helps in sending better signal to the muscles. Researchers have also showed that during mental practice stimulus are being sent to the muscles and this in turn enhances the muscle memory. The findings of the study are in conscience with the study of Post,Muncie & Simpson (2012). They had given Kinesthetic mental imagery intervention to the swimmers and found that 3 out of 4 athletes have significantly improved their performance. This also establishes the fact the Kinesthetic mental Imagery has positive impact on discrete as well as continuous skills. The study leaves immense scope in the field of applied sports Psychology and further studies should be carried out with different base line and other discrete sports skills.

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