THE IMPACT OF GUIDED IMAGERY AND PERCEPTUAL COGNITIVE TRAINING ON DISCUS THROW SKILL ACQUISITIONS

Abstract

The primary objective of the study was to determine the effects of cognitive perception training and psychological skill training (PST) and guided imagination training on the acquisition of discus throwing ability. In addition, the combined effect of the above two independent variables on discus throw skill acquisition was also investigated. To achieve the objective, a complete methodological research procedure was used. The research hypothesis led the researcher to the actual facts in a logical and scientific way. Based on the personal interaction with experts in the field and the research question and objectives of the study, the following hypotheses were formulated. For the present study, the sample was drawn from Lakshmibai National College of Physical Education, Thiruvananthapuram, India. A total of 20-30 novice discus throwers were selected as subjects for the study. The subjects were randomly assigned to one of the two experimental groups. Based on the targets, certain dependent and independent variables are formed.

Keywords: Perceptual Cognitive training, guided imagery, skill acquisition.

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I. INTRODUCTION

Imagination is referred to as "an experience that mimics a real experience and involves a combination of different sensory modalities in the absence of actual perception" (Cumming & Ramsey, 2009, p. s5Mental imagery can be described as the formation of mental pictures or visual representations when external information is absent. It's important to note that not everyone possesses the ability to conjure mental images voluntarily. Imagination is a psychological tool that has proven its effectiveness in the realm of sports, positively impacting psychological states by reducing anxiety and enhancing self-confidence, self-efficacy, and concentration (Garza & Feltz, 1998; Post & Wrisberg, 2012). Furthermore, imagination serves as a valuable coping mechanism, aids in skill maintenance, and allows for a review of past performances (Thelwell & Maynard, 2002; White & Hardy, 1998). Imagination is embraced by athletes at all levels, from grassroots to elite, highlighting its widespread significance.

The power of imagination lies in our ability to mentally create or recreate sensory experiences that closely resemble real events (Suinn, 1993). We continually revisit past memories and envision future scenarios, engaging all our senses, including sight, sound, and smell. These mental recreations can trigger the same emotions as the actual events, leading to physiological responses such as changes in heart rate, breathing, and muscle tension.

The potential of imagination is immense. Athletes can mentally rehearse their performance before a crucial competition, enabling them to prepare mentally for peak performance when it matters most. Visualizing themselves excelling in their sport can boost their confidence before a match. Additionally, during injury recovery periods, imagination can divert an athlete's attention from the injury itself, allowing them to mentally practice their athletic skills. Awareness of the research supporting the efficacy of imagery in skill retention when physical training is impossible can be a motivating factor for athletes during recovery. In situations where physical training is impractical, like during travel, imagery offers a means for athletes to practice and refine their techniques, enabling them to correct errors and maintain their skills. It's challenging to identify another factor that holds the potential to significantly impact not only an athlete's performance but also their overall sporting experience.

II. METHODOLOGY

The primary objective of the study was to examine the effects of cognitive perception training and psychological skill training (PST), as well as guided imagery training, on discus throw skill acquisition. In addition, the combined effect of the above two independent variables on discus throw skill acquisition was also investigated. To achieve the objective, a complete methodological research procedure was used. The following variables were selected for the study. Discus throwing skill acquisition was the dependent variable of the study. The total discus throwing ability was divided into different parts for easier evaluation. These are the variables that the researcher would like to manipulate to see their effects on the dependent variable. With this goal in mind, two independent variables were formed. The independent variables are the aided imagery training and the cognitive perception training. In order to collect the data for this study, the researcher will develop a test that will divide the overall discus throwing ability into five different parts:

- Posture
- Rotation in a circle
- Power-position
- Release and Recovery
- Distance thrown

Each part will be scored out of ten and the participant will be able to score maximum of 50 marks. This test will be conducted on all the experimental groups.

III. STATISTICAL DESIGN

The experimental design used to achieve the goal of the study was a modification of a randomised pre test-pos t-test group design. In this study, the modification consisted of two experimental groups. The advantage is randomization, so that any differences that occur in the post test are due to the experimental variable and not to possible differences between the two groups at baseline. This is the classic type of experimental design and has good internal validity. The external validity or generalizability of the study was limited by the possible effect of the pre-test.

Two groups, Pre-Test Post-test Randomized Group Design

Group	Pre-test	Treatment	Post-test
® E1	O1	X	O2
® E2	O1	X	O2
® C	O	NO TREATMENT	O.

IV. RESULT AND INTERPRETATION OF DATA

Table 1: Descriptive statistics of the pre test score of the different experimental groups in the "Overall Score

	Groups	Overall-Pre
N	Experimental Group-1	5
	Experimental Group-2	5
	Control Group	5
Mean	Experimental Group-1	22.8
	Experimental Group-2	17.4
	Control Group	16.4
Standard deviation	Experimental Group-1	5.26
	Experimental Group-2	4.22
	Control Group	1.34

The overall result of the different experimental groups in the pre-test of descriptive statistics is shown in Table 1. The results reflect the total number of subjects in each group of five. The mean score of experimental group-1 (the group that received imagination training during treatment) had the highest mean score (22.8+ 5.26). The Experimental Group-2 (the

group that received cognitive perception training during treatment) had a lower mean value in the variable in question (17.4+4.22) and the control group had the lowest value (16.4+1.34).

All assumptions for normality were tested for the data set and it was found that the data were normally distributed. To ensure this, a Mann Whitney test was performed.

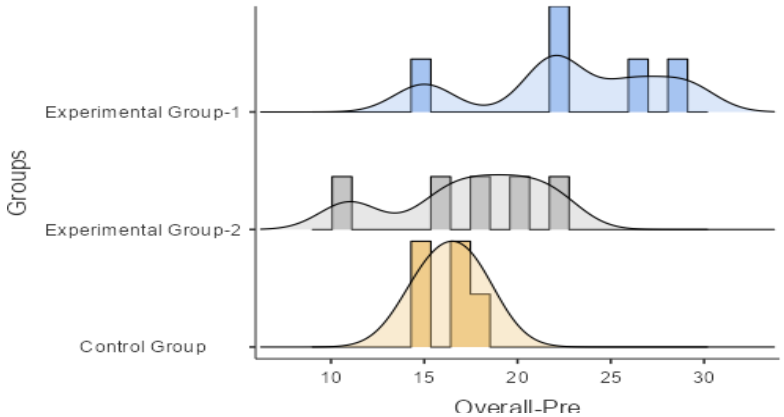

Figure 1: Graphical representation of the pre test score of the differentexperimental groups in the 'Overall Score'

Table 2: Descriptive statistics of the post test score of the different experimental groups in the "Overall Score"

	Groups	Overall-Post
N	Experimental Group-1	5
	Experimental Group-2	5
	Control Group	5
Mean	Experimental Group-1	37.2
	Experimental Group-2	22.0
	Control Group	22.0
Standard deviation	Experimental Group-1	3.96
	Experimental Group-2	6.67
	Control Group	3.94

The post-test results of the subjects in the Overall category were subjected to descriptive analysis and the results are shown in Table 2. From the results, there were five subjects in each of the groups. The mean of experimental group-1 (the group that received imaginable training during the treatment) had the highest mean (37.2±3.96). However, experimental group-2 (the group that received cognitive perceptual training during treatment) had a lower mean value in the variable in question (22.0+6.67), and the control group had the lowest value (22.0+3.94).

All assumptions for normality were tested for the data set and it was found that the data were normally distributed. A Mann Whitney test was performed to ensure that the application was same.

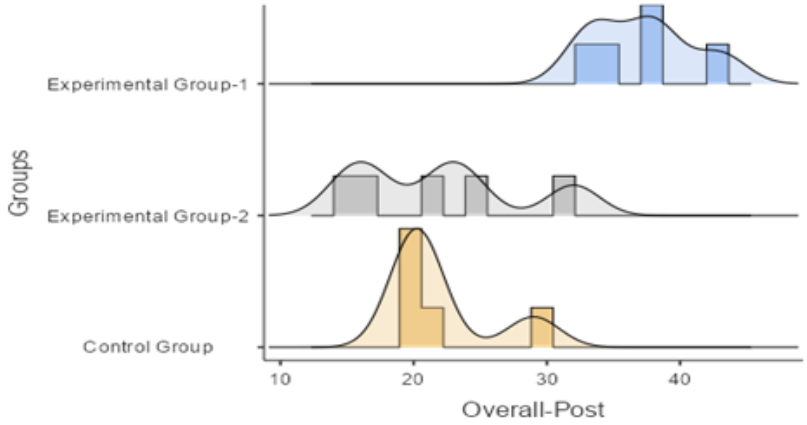

Figure 2: Graphical representation of the post test score of the differentexperimental groups in the" Overall Score''

From the table 03 it is very clearly evident that there was a significant difference in mean score of the "distance thrown" that might occur among the three different groups, whilst adjusting for pre test scores. The partial Eta Squared value was 0.56 which indicated the moderate effect size when compared with Cohen's guidelines (0.2 – small effect, 0.5 – moderate effect, 0.8 – large effect). The outputs are of indication that the independent variables had a significant impact on the dependent variable i.e., the Skill learning in discuss throw. Hence to know further, which group had higher impact on the overall skill learning, in discus throw. A post hoc comparison was done and the results are displayed in the table no 04.

Table 3: Post Hoc Comparisons among the groups in "First Turn" ANCOVA - Overall-Post

	Sum of Squares	df	Mean Square	F	p	η^2p
Groups	361.7	2	180.9	7.097	0.010	0.563
Overall-Pre	22.5	1	22.5	0.882	0.368	0.074
Residuals	280.3	11	25.5			

The table 04 displays the outcomes of the post hoc comparison among the groups based on the marginal means. The overall discus throw skill learning ability of the Experimental group-1 (Which received Imagery Training) was found to be significantly better than the experimental group 2 and Control group as well. However, the Experimental group 2 and the control group could not account for any significant difference in the overall skill acquisition in discuss throw. To conclude with, it can be said that the imagery training had the highest impact on the skill acquisition among the discus throwers but Perceptual cognitive training could not account for any significant impact on the overall skill learning in discus throw.

Table 4: Post Hoc Comparisons of overall skill learning scores among the groups

Comparison							
Groups		**Groups**	**Mean Difference**	**SE**	**df**	**t**	**p_{tukey}**
Experimental Group-1	**-**	**Experimental Group-2**	**13.339**	**3.76**	**11.0**	**3.550**	**0.012**
	-	**Control Group**	**12.995**	**3.96**	**11.0**	**3.278**	**0.019**
Experimental Group-2	-	Control Group	-0.345	3.21	11.0	-0.107	0.994

Note: Comparisons are based on estimated marginal means

V. DISCUSSION

From the analyses, it is clear that there was no significant difference in the mean score of learning the posture skill among the three different groups, considering the pre-test scores. The results indicate that the independent variables had no influence on the learning of stance technique in discus throwing among the subjects.

From the analyses, it is clear that there was a significant difference in the mean of learning the “skill of "first turn" among the three different groups when the pre-test scores were considered. The results indicate that the independent variables had a significant effect on the dependent variable, i.e., skill learning in discussing. The results of the post hoc comparison between the groups based on the marginal means showed that experimental group 1 (which received imaginary training) had no significant difference from the subjects in experimental group 2 (which received cognitive perception training). However, the mean scores of the experimental groups indicate that the subjects in experimental group 1 scored higher than those in experimental group 2. There was a significant difference (p=0.04) between the scores of the subjects in experimental group 1 and the control group, and the mean scores indicate that the experimental group benefited from imagination training.

There was no significant difference in the mean of learning the skill “power position” that could occur between the three different groups, considering the results of the pre-test. The results indicate that the independent variables had no effect on the learning of power position in discus throwing among the subjects.

There was no significant difference in the mean of learning the “skill of "release and recovery" among the three different groups when the results of the pre-test were taken into account. The results indicate that the independent variables had no influence on the learning of the skill "Release and recover" in discus throwing among the subjects.

No significant difference was seen in mean score of the “Distance thrown” that might occur among the three different groups, whilst adjusting for pre test scores. The outputs are of indication that the independent variables did not have any impact on the distance thrown in the discus throw among the subjects.

VI. CONCLUSION AND RECOMMENDATIONS

- The Guided Imagery training was found to have a significant Impact on the skill learning ability in discus throw.
- Perceptual cognitive training could not account for any significant impact on the Discus throw skill acquisition.
- The improvement among the subjects exposed to various experimental conditions was seen to be highest in case of Imagery training and then PCT.

Recommendations

- Such studies may be conducted at various spheres of sports and physical activity so that the results could be gathered and certain theories could be developed.
- The training for the different motor abilities is different and hence they put different kind of load on body and mind. The effect of different Psychological skill training enhancing skill acquisition in case of the sportsmen could be studied.
- The study could be done with better control of extraneous variables and with better experimental conditions that must take into account a very reliable method of monitoring and manipulating training loads.

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