MEASURING THE EFFECT OF IMAGERY ON 60M HURDLER

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ABSTRACT: *The purpose of this study is to measuring the effect of imagery on 60m Hurdler. Experimental type of research has been used for conducting and analyzing this study. The analysis of the current study showed enhancement of performance in 60m hurdler. The researcher has divided twenty four (24) athletes into two groups Treatment Group (n = 12) and Control Group (n = 12). Treatment Group (M. age =20.75 years, SD = 1.60 years), M. height = 176.3cm, SD = 3.25 cm), M. weight = 68.2 kg, SD = 2.59 kg) and Control Group (M. age =20.83 years, SD = 2.12 years), M. height = 175.1cm, SD = 3.65cm), M. weight = 69.83kg, SD = 3.83kg). The researcher used PETTLEP model for imagery. The Treatment Group completed 15 minutes of imagery training followed immediately by thirteen minutes of "Hurdle training" two times per week. The Control Group completed only thirteen minutes of "Hurdle training" two times per week. The Sport Imagery Questionnaire was administered to both the groups in the pretest and posttest. The researcher gave 60m hurdle performance test to both the groups. After the eight -week imagery training and hurdle training program, a post-test took both group administrated Sport Imagery Questionnaire 60m hurdler. Treatment Group improved significantly ($p < 0.01$) from pre to post-test. The results strongly support the use of imagery in enhancing performance on 60m hurdlers.*

Key Words: Imagery, Hurdler, Psychology, Sports

INTRODUCTION

Imagery is one of the essential parts of sport psychology **[2,3]**. Through systematic procedure all players have the power to increase their imagination abilities **[4,5]**. First time electromyography was used on players in which muscle contraction with simple imaging movement of arm flexion was noted **[6]**. After that many other researchers supported this study **[7,8].** 1934 first study was conducted about mental practice effects on motor skills. Then Plethora also worked on this area of study **[9]**. The definition of imagery is mental technique which helps mind and body to produce desired reaction **[10,11]** also supported this definition of imagery. Imagery is a volitional experience in which man creates or recreates a particular physical skill through different senses. The imagery is based on the memory that humans are capable of imitating the motor actions of others. It is the utilization of all senses to recreate or produce associate degree expertise within the mind. He explained that through imagination actions of others are imitated as a result the mind takes an image of the ability that functions as blueprint for performance. Imagery relies on memory and is skilled internally by reconstructing external events mentally **[12]**. Williams proposed that mental imagery is beneficial to re-create one's own performance after competition to judge it and determine strengths and weaknesses. "It is really an imagery intervention". Several case studies which indicated that the use of visual motor behavior rehearsal (VMBR) can improve performance in sports such as football **[14,13]**, basketball **[15]**, tennis **[16]** and skiing **[13]** Combined with the other more recent case study results, there is a growing body of intervention evidence to support the effectiveness of imagery in enhancing performance **[17]**. Imagery is also used for relaxation technique because it has been suggested prior to performing imagery to increase its effectiveness. Studies have proven that the majority of elite athletes deliberately employ imagery. Similarly, most sports psychologists systematically apply imagery to increase their performance **[18,19,20,21]**. Mental practice session method is imagery, which is consistent **[15]** "It is a method that includes systematically rehearsing a few behaviors, imaging a selected motor skill." It is also referred to as muscular reminiscence. Moreover, imagery is described as the system which includes systematic exercise of a motor behavior, by creativeness of a specific motor skill, additionally referred to as muscular memory, and one variable that has been proven to influence participation, motivation, and overall performance inside the physical practice domains of motor learning, exercising and game, is mental imagery. Imagery has been described as "the ability to represent perceptual states in the absence of the proper sensory contribution **[22,23]** proposed an easy definition: "Mental rehearsal use is the manner where men and women image themselves in methods that can lead the training and establishing ability and enhance the efficiency of those skills. It's regularly assessed in time period of its cognitive and motivational attributes". Mental rehearsal is a mantle procedure that can assume an essential part in the arranging and performance of developments or activities **[24,25,26]**. It is every now and again utilized to help motor ability skill, or relearning, and enhance motor performance in clinical, move, and game settings **[27,28]**. For some years imagery has been recognized as a powerful tool to enhance athletic overall performance and sporting achievements. As a result, it has come to be one of the most popular mental strategies employed by athletes, coaches, and game psychologists. Even though there's an abundance of evidence highlighting imagery's effectiveness, the mechanisms behind its fulfillment or why imagery is so effective, till these days has remained inconclusively answered. Extra conventional imagery theories or ideas offer unclear or inadequate explanations and are consequently been criticized. However due to improvements in brain imaging techniques, the most recent theory rising from neuroscience studies is the theory of useful equivalence. This principle proposes that once someone images, he activates comparable areas of the mind which also come to be active if the individual, without a doubt, engages the challenge. For instance, if an athlete photographs himself at the start of race, the regions of the brain which come to be energetic when he honestly takes a start will activate for the duration of imagery of the undertaking **[29]**.

Imagery Types:

a. Cognitive Specific

This purpose to increase abilities and techniques to improve performance.

b. Cognitive General

This motive consists of method, planning, development, and execution.

c. Motivational Specific

The motive is to assist athletes understand what it takes to attain their dreams.

d. Motivational General Arousal

That is the usage of imagery to modify feelings and arousal tiers which include psyching up or relaxing.

e. Motivational General Mastery

It is when athlete uses imagery for things such as staying focused, confident and mentally tough.

Nevertheless the players utilize senses as a part of mental rehearsal. Sentiments give feelings connected with different exciting competitions. Athletes can utilize mental rehearsal to control nervousness, For instance, players could re-make their contemplations and emotions experienced during competition to see how and why nervousness affects their performance. In utilizing mental rehearsal to make remarkable exhibitions, players must have the feelings connected with those competitions, for example, joy, fulfillment, pride, and self-regard **[30]**. Athletes who deliver the energy of their imaginations beneath control can use it. For individual development study presents that top athletes, their trainers, and sporting activities, psychologists rent imagination greater than any other performance improvement method **[18]**.

LITERATURE REVIEW

In a study investigated the effectiveness of mental training in combination with various forms of instruction on the execution of forehand strokes in tennis. In all experiment groups mental training in combination with audio instruction; audiovisual instruction; and visual instruction, performance improvements in forehand strokes, in comparison to the control group, could be observed. The most effective program in this study proved to be mental training in combination with audio instruction. In particular, mental training was studied in connection with the learning elements of the technique and results showed that experimental group enhanced the performance rather than control group **[31]**.

The usage of mental rehearsal through elite athletes appears to be fashionable and supplies additional proof for the effectiveness of mental rehearsal as a way of completion enhancement. Of the two hundred and thirty-five Canadian Olympic players who joined the 1884 Olympics video game, ninety-nine percent said of using mental rehearsal). These athletes claimed that for the period of training they engaged preplanned systematic mental rehearsal at least four times per week, for approximately twelve minutes each day ever. At Olympic web page, four suggested engaged in mental rehearsal for two to a few hours in their pursuits. From a sample of forty elite gymnasts, ninety two percent pronounced utilizing mental rehearsal to follow potential methods, to remember and manage emotions to make stronger awareness, and to set targets **[32]**.

In another study performance enhancement strategies were observed in a professional tennis tournament. One hundred fifteen athletes were selected for this study in preparation for Lipton Tennis Tournament 1992. Thirteen questionnaires were administrated to all the players. Fifty (50) players used common strategies (i.e., mental preparation), relaxation, and goal-setting and self-talk for every pre service & pre service return. The athletes felt that their motivation to compete, preserve attention all through the match, and self-confidence affected their performances appreciably **[18]**.

This study investigated the relationship between the use of imagery and self-efficacy. The researcher selected (50) university athletes for this study. Those athletes selected belonged to individual games like wrestling, rowing, and athletics and administrated (SIQ) and self-efficacy questionnaires. The study showed that Motivational imagery had a significant effect on athletes who had high self-efficacy. This study shows that self-efficacy plays a significant role for using imagery **[33]**.

Biathlon is including winter games that consolidate outdoor skiing with rifle shooting. Explored the impact of mental rehearsal preparing on the shooting events of biathlon players. Athletes in experimental group underwent mental rehearsal training for 15 minutes daily, and the outcomes of the study presented that the mental rehearsal training increased the athletes' postural control and hold stability while shooting **[34]**.

Study proved that imagery had positive effect on competition anxiety. Goal setting, positive thinking and self-talk, concentration and routines, arousal regulation techniques, and imagery all factors clued in mental training program (MTP). Total nine players were selected for this study. Those were elite junior tennis players belonging to northwest part of Greece. Nine players were divided into groups. The control group had four who did only tennis practices. Experimental group had five players using mental practice and tennis practice. The results showed that the intensity of self-confidence and the overall tennis performance were greater in the dimensions of somatic anxiety, cognitive anxiety and self-confidence for the intervention group in the post-test **[35]**.

The previous study investigated the effect of many imagery modalities on performance of golf putting. The researcher randomly selected forty (40) professional golfers for this study and divided one four groups. (i) Written script" Group, (ii) Audio and Video Groups, (iii) Control Group, first group got personalized, response proposition-laden script. Second group could listen an audiotape or videotape of golf putting. Third group spent same time for reading golf literature. Each golf player putting fifteen ball two time a week and perform imagery and reading for six weeks. In the pretest showed no significant difference in the performance. Posttest showed that second group (Video and Audio Groups) improved significant ($p < 0.05$) the performance rather than first (written script) & third group (Control Group) **[36]**.

In another study through imagery practice improvement accuracy of teeing off in golf. Twenty three novice athletes were selected for this study and divided in three groups. One group combines mental training and physical practice of this shot. The second group only did physical practice one time in

a week and the third group remained engages in other sports activities without imagery training and physical practice. After that first group (imagery training and physical practice) improved the performance much better than second and third groups. Results strongly showed that imagery practice can be used effectively to enhance overall performance even with novices **[37]**.

In another study imagery was used for rehabilitation of injured athletes. The researcher selected ten injured athletes for this study. Those athletes were selected who were already engaged in physiotherapy treatment. After the imagery practice and proper physiotherapy treatment shows positive result of injury rehabilitation. The researcher suggests that medical doctor and physiotherapists should know the benefits of imagery practice in athletic injury recovery **[38]**.

Another study found the difference of imagery usage between open-and closed skill sports. The basic object of this study was to check the effect of competitive level on professional and nonprofessional athletes. The researcher selected eighty three athletes (thirty nine professional / forty four non-professionals of different games (rugby, martial arts golf, skating). The athletes were administrated (Sport Imagery Questionnaire) no more than (24) hours prior to competition. The results showed that basic effect competitive level and skill-type were significant ($p < .05$) CS and CG imagery types were used by professional athletes rather than non-professionals ($p < .001$) **[39]**.

In a study compared PETTLEP imagery and traditional imagery on a computer game (Need for speed underground 2). The researcher randomly selected (80) participants for this study and divided them into four groups (i) Physical Practice Group, (ii) Control Group (iii) PETTLEP Imagery Group (iv) Traditional Imagery Group. In the pretest three practice attempts were given to each participants and actual attempts were five. After the 45 minutes post-test was given. Results showed that Physical Practice Group and PETTLEP Imagery Group both enhanced performance significantly ($p<0.05$) in post-test and Control groups and Traditional imagery showed no enhancement in the performance post-test **[40]**.

The study evaluated the serving accuracy in tennis serving competition (pre-competition positive imagery and self-instruction). Randomly selected 115 adult tennis players for this study and divided them into two groups. First group (Experimental Group) used positive imagery, self-instructions and the Control Group did not use mental practice techniques. The results showed that experimental group (positive imagery about serving; self-instructions) enhanced the performance rather than Control Group **[41]**.

In another study was to investigate the relationship between imagery and confidence in football player. The researcher selected one hundred & twenty two male and female footballers for this study with ages eleven to fourteen. The Researcher administrated three questionnaires (i) Imagery questioner (ii) Self-confidence questioner (iii) Self-efficacy questioner. MG-M used for both recreational and competitive of footballers and important predictor of self-confidence and self-efficacy and the results of the study showed that MG-A function should be suggested to young players to develop more self confidence and self efficacy, irrespective of competitive level **[42]**.

In the study compared the effect of traditional imagery and PETTLEP imagery on muscle strength. Fifty (50) participants were divided in to five groups PETTLEP, traditional imagery, control, PETTLEP / physical, physical practice (combination). Bicep curl machine was used for pre and posttests. PETTLEP imagery training programmed twice per week. After (6) week, this enhanced the performance of PETTLEP, combination, and physical groups but control and traditional groups did not improved in posttest **[43]**.

In previous study investigated the effect of (internal imagery, slow-motion mental practice, and no practice) of penalty kick of soccer. Thirty university players were selected for Crossman penalty kick test. Thirty players were divided into three groups. First group used internal imagery, the second group used slow-motion mental practice, and the third group used no practice. The Researcher took pre-mid-post-tests and used session imagery for eight weeks. Results showed that the first and second groups improved the performance and showed significant effect in post-test. Moreover in the first days imagery was more effective **[44]**.

The previous study compared the effect of PETTLEP imagery on new skill learning in novice volleyball players. Thirty six novice players were divided into three groups.(i)Experimental Group (PETTLEP with physical practice) (ii) Traditional imagery with physical practice) (iii) Control Group (physical practice). For eight weeks, they did physical training, traditional imagery and PETTLEP imagery. Results showed that the first group (Experimental Group) enhanced the performance and showed significant ($p < 0.05$) affect in post-test rather than second and third group **[45]**.

The previous study checked the effect of PETTLEP intervention on movement imagery ability and performance of a soccer task in children. Thirty six (36) children (Thirty four male and two female) were selected for this study and divided into two groups (i) PETTLEP Group (ii) Nutrition Control Group. In the pre-test children were administrated (MIQ) and dribbling test. Posttest procedure was the same with the addition of a nutritional knowledge test. After five weeks imagery invention results showed that no significant effect between motor task performance and imagery ability ,age and external visual correlation significant ($p< 0.05$) and kinesthetic imagery($p< 0.05$). In the nutrition test the nutrition group scored significantly ($p< 0.05$) better than imagery group [46].

Another study checked the imagery use and imagery ability in team sports and individuals. The researcher selected 207 participants from high school, sports club, and University players of Finland. The researcher administrated (SIAM) and the (SIQ) to all participants. The results showed that individual athletes had significantly ($p = .002$) means in kinaesthetic imagery ability rather than team sports **[47]**.

METHODOLOGY

Through convenience sampling selected one hundred and twenty(120) novice athlete of Department of Sport Sciences and Physical Education, University of the Punjab Lahore, Pakistan and administrated adapted Sport Motivation Scale

(SMS) and selected twenty four (24) novice athletes who got score more than 67% in Sport Motivation Scale (SMS) for this research. After following ethical approval from the institution where the research was based, an information session was held to inform teacher and students about the study. They were given an information letter and asked to give consent for their participation and then divided twenty four *(n=24)* athletes in to two groups. First was Treatment Group *(n=12*) and second was Control Group *(n=12)*. Researcher administered adapted Sports Imagery Questioner SIQ **[1]** to assess athlete's use of the five cognitive and motivational functions of imagery. An average frequency score for the athletes' use of each of the five functions CS-MGA-CG-MS-MGM was then calculated. Sixty (60m) hurdle race was arranged for both Treatment Group & Control Group. Researcher also used six fixed video camera operating at (50 Hz) located at the main stand were used to film the races. Camera one covered the first thirteen meter; camera two from thirteen meter to thirty meter; camera three from thirty meter to forty seven meter and camera four covered last thirteen meter (forty seven –sixty meter) of the race, cameras five and six were located with a frontal view: camera five covered the first thirty meter and camera six covered last thirty meter **[48]**. Researcher also used bell which synchronized with LED light system, (Including the starter and starting block). After collecting data (video of races) of all the athletes 60m (HR) and analyses on (Kinovea software v.8.15). Treatment Group of twelve (*n=12)* athletes was trained through physical and imagery training with eight (8) week programmed session. Researcher worked on the internal imagery and imagery session design by PETTLEP Model [49] devised the PETTLEP model. Each imagery session was fifteen (15) minutes in a day and two times a week. An imagery training program was organized for Treatment Group at the ground of the Department of Sport Sciences and Physical Education, in the campus of the University of the Punjab Lahore Pakistan. After the imagery session, each physical training program consisted of 30minutes. Kinovea software was used for measurement/or recording 60m hurdle race times of 60m (HR) **[50]** Statistical Package for Social Sciences (SPSS) was used to analyze the data and allow application of different statistical techniques to draw meaningful inferences. Descriptive Statistics, Correlation Paired-Samples T-Test, and independent T-Test were used.

RESULTS SUMMARY

Table No.1 Age, Height and Weight of participants (Descriptive Statistics)

Variab-le	Group	n	Minimum	Maximum	Mean/ Std Deviation.
Age	Treatment	12	18 year	23year	20.75±1.60
	Control	12	18 year	24year	20.83±2.12
Height	Treatment	12	172.00cm	180.00cm	176.25±3.25
	Control	12	169.00cm	180.00cm	175.08±3.65
Weight	Treatment	12	64.00kg	72.00kg	68.17±2.59
	Control	12	63.00kg	76.00kg	69.83±3.83

The table.1 shows that the age, height, and weight of groups, Treatment and Control are same on average. Novice athletes (n=12) of Treatment Group was minimum age (18) eighteen year old, maximum age (23) twenty three year old and *M/SD*=20.75±1.60. Minimum height of Treatment Group was 172cm, maximum height 180cm and *M/SD*=176.25±3.25.Minimum weight of Treatment Group was 64kg, maximum weight of 72kg and *M/SD*=68.17±2.59. Novice athletes (N=12) of Control Group was minimum age eighteen year old (18), maximum age (24) twenty three year old and *M/SD*=20.83±2.12. Minimum height of Treatment Group was 169cm, maximum height 180cm and *M/SD*=175.08±3.65. Minimum weight of Treatment Group was 63kg, maximum weight of 76kg and *M/SD*=69.83±3.83.

Table No.2 Overall Score of five (5) Imagery Types of Treatment Group

Variable	Group	n	Minimum Score	Maximum Score	Mean/SD
MS	Pre - Test	12	11.00	15.00	12.75±1.29
	Post-Test	12	31.00	37.00	34.08±1.97
MGA	Pre-Test	12	10.00	20.00	13.08±2.97
	Post-Test	12	29.00	36.00	32.67±1.82
CS	Pre-Test	12	9.00	19.00	11.67±2.90
	Post-Test	12	29.00	39.00	34.50±2.61
CG	Pre-Test	12	9.00	15.00	11.83±1.75
	Post-Test	12	33.00	39.00	35.33±1.61
MGM	Pre-Test	12	9.00	16.00	12.42±2.31
	Post-Test	12	29.00	38.00	34.25±2.38

Table No.3 Coefficients of correlation of MS-MGA-CS-CG-MGM pre-test of Treatment Group

n=12	MS-pre	MGA-pre	CS-pre	CG-pre	MGM-pre
MS-pre	1	.149	-.292	.020	.221
MGA-pre		1	-.176	-.155	.100
CS-pre			1	-.782**	.226
CG-pre				1	-.004
MGM-pre					1

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation coefficients of imagery types (variables) before Treatment are shown in table.3 of pretest of Treatment Group. The correlations between all variables are insignificant ($p<0.05$) except CS and CG variables, i.e. significant ($p<0.01$).

Table No.4 Coefficients of correlation of MS-MGA-CS-CG-MGM post-test of Treatment Group

n=12	MS-post	MGA-post	CS-post	CG-post	MGM-post
MS-post	1	-.319	.009	.361	.227
MGA-post		1	-.286	-.267	-.021
CS-post			1	-.108	-.051
CG-post				1	.355
MGM-post					1

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation between all imagery variables after imagery training of Treatment Group was insignificant ($p<0.05$). It was noted that the correlation between imagery variables had become inverse sign after imagery treatment.

Table No.5 Results of T-Tests for Treatment Group

Type	Variable	n	Mean	SD	Difference	t	p
1	MS post-test score MS pre-test score	12 12	34.08 12.75	2.23	21.33	33.15	.000
2	MGA post-test score MGA pre-test score	12 12	32.67 13.08	3.60	19.59	18.82	.000
3	CS post-test score CS pre-test score	12 12	34.50 11.67	4.17	22.83	18.95	.000
4	CG post-test score CG pre-test score	12 12	35.33 11.83	2.50	23.5	32.50	.000
5	MGM post-test score MGM pre-test score	12 12	34.25 12.42	2.40	21.83	31.44	.000

T-Test (For Paired Sample)

Motivational – Specific

Paired sample t-test was conducted to compare MS pre and post-test score of Treatment Group. There was a significant ($p<0.001$) difference between MS pre and post-test scores of Treatment Group. It was concluded that imagery had significant positive effect on athletes.

Motivational – General –Arousal

Paired sample t-test was conducted to compare MGA pre and post-test score of Treatment Group. There was a significant ($p<0.001$) difference between MGA pre and post-test scores of Treatment Group. It was concluded that imagery had significant positive effect on athletes.

Cognitive-Specific

Paired sample t-test was conducted to compare CS pre and post-test score of Treatment Group. There was a significant ($p<0.001$) difference between CS pre and post-test scores of Treatment Group. It was concluded that imagery had significant positive effect on athletes.

Cognitive-General

Paired sample t-test was conducted to compare CG pre and post-test score of Treatment Group. There was a significant ($p<0.001$) difference between CG pre and post-test scores of Treatment Group. It was concluded that imagery had significant positive effect on athletes.

Motivational- General- Mastery

Paired sample t-test was conducted to compare MGM pre and post-test score of Treatment Group. There was a significant ($p<0.001$) difference between MGM pre and post-test scores of Treatment Group. It was concluded that imagery had significant positive effect on athletes.

Table No.6 Paired Sample T-Test on Treatment Group for 60m Hurdle Race (HR)

#	Variable	n	Mean	Differ-ence	SD	t	p
1	Race Time before Treatment	12	13.11	2.51	.69	13.48	.000
2	Race Time after Treatment	12	10.60		.28		

Paired sample t-test was conducted to compare the race time before imagery practice and after imagery practice of Treatment Group for 60m HR. There was a significant ($p < 0.001$) difference between mean race times of athletes before and after imagery practice. It was concluded that imagery & physical training had a significant effect on the performance of athletes as shown in table 6.

Table No.7 Score table of all Types of imagery post-test Treatment Group and Control Group

Varia--ble	Group	n	Minimum Score	Maximum Score	Mean/SD
MS	Post-Test Treatment	12	31.00	37.00	34.08±1.97
	Control	12	11.00	18.00	14.42±2.50
MGA	Post-Test Treatment	12	29.00	36.00	32.67±1.82
	Control	12	9.00	18.00	14.17±2.55
CS	Post-Test Treatment	12	29.00	39.00	34.50±2.61
	Control	12	10.00	18.00	13.67±2.67
CG	Post-Test Treatment	12	33.00	39.00	35.33±1.61
	Control	12	9.00	18.00	13.58±2.81
MGM	Post-Test Treatment	12	29.00	38.00	34.2±2.38
	Control	12	9.00	17.00	12.67±2.01

Table No.8 Coefficient of correlation of MS-MGA-CS-CG-MGM of Control Group

n=12	MS-pre	MGA-pre	CS-pre	CG-pre	MGM-pre
MS-pre	1	.230	.362	.660*	.553
MGA-pre		1	.808**	.327	.524
CS-pre			1	.101	.619*
CG-pre				1	.326
MGM-pre					1

Correlation coefficients of imagery types (variables) Control Group are shown in table 8 of pretest of Treatment Group. The correlations between all variables are insignificant ($p<0.05$) except MS and CG, MGA and CS, CS and MGM, and in table.3 and table.4 variables are insignificant ($p<0.05$) except CS and CG variables, i.e. significant ($p<0.01$).

Table No. 9 Independent Sample T-Test on Treatment and Control Groups

Score	N	Mean/SD	*t*	df	p	Mean Diffe-rence	Std. Error Difference
T-G	12	34.08±1.97	21.37	22	.000	19.67	.92045
C-G	12	14.42±2.50					

Table-9 shows the results of independent T-test Treatment Group and Control Group. Treatment had mean 34.08 and Control mean 14.42 .This table shows that there was significant between mean score of Treatment and Control Group. It was concluding that was score of Treatment Group had larger score then Control Group. Further it was

determine that imagery had a significant (p<0.001) positive effect on novice athletes.

Table No.10 Paired Sample T-Test Pre & Posttest 60m (H) on Control Group

#	Race Time	n	Mean	Difference	SD	t	p
1	Pretest60m (HR) C-G	12	12.90	1.47	1.12	10.80	.000
2	Posttest60 m (H) C-G	12	11.43		.77		

Paired sample t-test was conducted to compare pre test and post-test 60m (HR) time of Control Group. There was a significant ($p < 0.001$) difference in the pre-test and posttest 60m (HR) time .It suggested that physical training had significant effect on athletes which shows in mean difference 1.47 pre-test and posttest 60m(HR) time of Control Group.

Table No.11 Results of independent T-Test for post-test Treatment & post-test Control Group 60m (HR)

Race Time	N	M/SD	Diffe-rence	t	Df	p	Mean Differ-ence
Post-test T-G	12	10.60 ±.28	-.82	3.48	22	.002	-.83
Post-test C-G	12	11.43 ±.77					

Treatment had mean 10.60 and Control mean 11.43.This table shows that there was significant between mean time of Treatment and time Control Group. It was concluding that were time of Treatment Group had lesser time then Control Group. Further it was determine that imagery had a significant (p<0.005) positive effect on novice athletes.

DISCUSSION

The purpose of this research was to compare the groups of athletes (i) physical practice with imagery (Treatment Group) and (ii) physical practice only (Control Group) under the hypothesis that the physical practice with imagery training would improve the performance of the athletes as compare to the physical practice only.

The seven components of PETTLEP imagery training with PETTLEP based are (Physical, Environmental, Task, Timing, Learning, Emotion and Perspective **[49]**. This study on non-professional athletes of 60m (H), Department of Sports Sciences & Physical Education University of the Punjab Lahore, Pakistan.

The Treatment Groups completed 15 minutes of imagery training followed immediately by thirteen minutes of "Hurdle training" two times per week. The Control Group completed only thirteen minutes of "Hurdle training" two times per week. In present study the researcher took 60m (HR) performance test to both the groups; Treatment Group & Control Group. After the eight week imagery training and hurdle training program, both groups were given Sport Imagery Questionnaire **[1]** as post-test & 60m (H) performance test.

In this study the types of imagery Motivational Specific (MS), Motivational General Arousal (MGA), Cognitive Specific (CS), Cognitive General (CG) and Motivational General Mastery (MGM) were analyzed, the overall mean score and SD were 13.70 and 2.51 respectively. These results supported the study of **[43]** and **[45]** of imagery pretest score.

The post-test mean score and SD of (Treatment Group) types of imagery i.e. MS, MGA, CS, CG, and MGM were 34.16 and 2.22, respectively. These results also validated and closed to the study of [43] and [45] imagery post-test score.

The paired-samples t-tests were performed to compare the pre-test and post-test score of these imagery types for both Treatment and Control Groups. There was a significant difference (p<0.001) between the mean scores of pre & post-test results. In a study compare "PETTLEP imagery and traditional imagery" on a computer game (Need for speed underground 2). Results showed that and PETTLEP imagery group had enhanced the performance significantly (p<0.05) in post-test **[41]** so, the current study showed more significant results as compare to the study of **[40]**.

The same paired-samples t-tests were applied to pre & post-test results of 60m HR of Treatment Group. In the pre-test & post-test results of 60m (HR) the Treatment Group had a significant difference (p<.001) in pre to posttest. In a study concluded that the traditional imagery and PETTLEP imagery had a significant effect on muscle strength **[44]**. The results of current study of 60m (HR) supported the results of the study of **[43]** on muscle strength. The results showed that imagery & physical practice enhanced the performance significantly (p<0.05) in post-test. In another study **[40]** compare "PETTLEP imagery and traditional imagery" on a computer game (Need for speed underground 2). Their results also supported that PETTLEP imagery group enhanced performance significantly (p<0.05) in pretest to post-test; and traditional imagery showed no improvement in performance in posttest.

Another study compared the effect of PETTLEP imagery on new skill learning in novice volleyball players. The results of said study supported the current study that first group Experimental Group (PETTLEP with physical practice) enhanced the performance and had showed significant ($p < 0.05$) effects on post-test **[45]**. In a study determined the improvement accuracy of teeing off in golf through imagery practice. First group (imagery training & physical practice) increased the performance rather than second and third group. Results strongly showed that imagery practice can be used effectively to increase overall performance even with novices **[37]**. In the study evaluated the serving accuracy in tennis serving competition (pre-competition positive imagery and self-instruction). The results showed that experimental group (positive imagery about serving; self-instructions) increase the performance (p<.001) rather than control group **[41]**.

Overall imagery results show that in the pre-test of Treatment Group imagery has no effect on 60m hurdler but after the imagery practice, post-test result shows a significant difference (p<.001). On the other side pre-test 60m hurdler of Control Group has no effect of imagery whereas imagery practice was given to Control Group.

At the end post-test of Treatment Group is compared with control group, the result showed that posttest of Treatment Group has a significant difference from the Control Group. After that imagery practice & physical training was given to Treatment Group while on the other side Control group did only physical training. The Final results show that the members of Treatment Group, improved their performance & significant difference between pre and posttest. Control Group did not have imagery practice but they improved performance in 60m hurdle because they also got physical training. Control group member improved performance but it was better not than Treatment Group performance.

CONCLUSION

Sample of twenty four (24) novice athletes was selected by random sampling method and it was divided into two groups (i) Treatment Group and (ii) Control Group. Researcher administrated Sport Imagery Questionnaire **[1]** to both groups as pretest. The Treatment Group completed 15 minutes of imagery training followed immediately by thirteen minutes of "Hurdle training" two times per week. The Control Group completed only thirteen minutes of "Hurdle training" two times per week. The researcher took 60m (HR) performance test to both Treatment & Control Groups. After the eight week imagery training and hurdle training program, both groups were given Sport Imagery Questionnaire **[1]** as post-test and 60m HR performance test. It was observed that Treatment Group improved significantly (p<0.001) from pre to post-test. In this research nevertheless, as hypothesized Imagery has positive effect on 60m hurdler. A paired- sample t-test showed that the imagery training (Treatment Group) improved significantly (p<0.001) from pre-test to post-test and also 60m HR performance of Treatment Group improved significantly (p<0.001) from pre-test to post-test. Overall imagery post results showed that imagery had significant (p<0.001) effect on 60m hurdler. The final results showed that the members of Treatment Group improved their performance & there was a significant (p<0.001) difference between pre and posttest results. Control Group did not have imagery practice but they improved performance in 60m hurdle because they had also got physical training. Control Group member improved performance but it was lesser than the performance of Treatment Group. The results strongly support the use of imagery in enhancing performance of a 60m hurdler.

RECOMMENDATIONS

Future research needs to compare the gender differences on imagery among novice and elite athletes. Furthermore the ability effect of coach among athletes should also be conducted longitudinally. More research needs to focus on applying long-term PETTLEP interventions to different sports. Assessing the effectiveness of PETTLEP imagery used in various combinations with physical practice would also be a useful addition to the literature. Sport psychology practitioners should be presented with many opportunities to evaluate how imagery can facilitate the individuals in different ways and settings. Future research needs imagery to be applied on different games and enhance player's performance.

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