

# Effect of Mental Imagery Training & Tratak Kriya on Stopping of Penalty Strokes in Hockey

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**Abstract-** This study was determined to identify the effects of Mental Imagery Training & Tratak Kriya training on stopping the penalty stroke by goalkeeper in hockey. A total of 150 male hockey players from Delhi, whose average of stopping the penalty stroke ranges from 3-5 out of 10 penalty strokes in 2 trials were selected. The subjects were further randomly divided into three groups namely MIT (Mental Imagery Training Group) N = 50, TK (Tratak Kriya Group) N = 50 and CG (Control Group) N = 50. All the 3 groups did regular hockey training; followed by 20 minutes of mental imagery training (by MIT Group only) and tratak kriya training (by TK group only) for 3 days in a week and for 8 weeks respectively while Control group received the hockey training session only. The results of the study showed that all the three groups had significantly improved in the rate of stopping the penalty stroke as the paired t' value obtained for MIT, TK & CG were found to be 18.406, 14.984 & 4.598 at  $p \leq 0.05$  respectively. The highest percentage of improvement was seen in MIT group followed by TK group and CG as the value obtained were 63.59%, 50.00% and 18.27% respectively. The LSD post hoc analysis confirms that the percentage improvement differs significantly between the groups as the mean differences obtained for CG- MIT, CG- TK and MIT- TK were 1.720, 1.220 and 0.500 at  $p \leq 0.05$ . Therefore it was concluded that mental imagery training and tratak kriya training were proved to be effective means for the improvement in stopping the penalty stroke in hockey and hence it may be used as a part of cognitive training for the making an hockey goalkeeper player.

**Index Terms-** Mental Imagery Training, Tratak Kriya Training, Penalty Stroke, Goal Keeper, hockey.

## I. INTRODUCTION

In recent years the use of cognitive strategies to facilitate optimum performance has gained increased acceptance. Cognitive strategies teach the athletes psychological skills that they can employ in their mental preparation for the competition. In addition to focusing on alleviating the harmful effects of anxiety and arousal, these cognitive strategies can also be used to enhance motivation and self confidence and to improve performance consistency (D. A. Wuest and Charles A. Bucher, 1994).

Mental practice devotes the cognitive rehearsal of an action without overt performance of the physical performance of the physical movement involved (Oriskell, copper and Moran, 1994). It has also been defined by Richardson (1967) as "The Symbolic Rehearsal of a Physical Activity in the absence of any Gross Muscular Movements". The importance of mental factors in sport was also underlined by Mike Marsh, the American Champion Sprinter, who claimed that the ability to win comes "90% from the mind and 10% from the body" (Chadban, 1995)

Besides practicing mental rehearsal the athletes may also use Tratak Kriya another form of intervention technique to enhance performance. Tratak or steady gazing is an excellent concentration exercise. It involves alternately gazing at an object or a point without blinking, then closing eyes and visualising the object in mind's eye. The practice steadies the wandering mind and concentrates attention, leading to focus with pin point accuracy, whenever the eyes go, and the mind follows. So that when you fix your gaze on a single point, the mind too becomes one pointed. Tratak also improves the eye sight and stimulus the brain via the optic nerve.

In recent years the study of mental imagery has sparked the interest of many scholars in the field of sport psychology. It is now recognized that, in general, imagery is used daily by most people (Barr & Hall, 1992). In addition, many athletes and coaches have realized the important role that imagery plays (Salmon, Hall, & Haslam, 1994) and have incorporated its use in into their training regimens (Martin, Moritz, & Hall, 1999).

Mental imagery can be defined as the process that occurs when we recreate experiences in the mind using information that is stored in the memory. Dreaming is an unstructured form of imagery, but the type of imagery we're interested in here is structured imagery, where the athlete uses his or her imagination in a controlled fashion to recreate specific images. There are a number of different ways of visualizing images or experiences recreated in the mind (e.g. you can visualize yourself feeling movement internally, or externally as a spectator) but research shows that the more able an athlete is to control his or her imagined movements, the greater the potential performance enhancement (Advances in Sport Psychology (2nd ed), Champaign IL: Human Kinetics, 2002:405-439)

These aspects of the mental imagery and tratak kriya process need to be constantly practiced in order to elicit results. Even though individual differences exist in mental imagery ability, generally, better imagery control correlates to better performance in the motor skill (Annett, 1995). Another approach is to combine the techniques of mental imagery with physical practice of the intended skill

labelled visual-motor behaviour rehearsal, which in fact till date, had not been used or applied in the field of hockey hence the study has been undertaken.

## II. OBJECTIVES AND HYPOTHESIS

The study was conducted with the objectives to determine the effect of Mental Imagery Training and Tratak Kriya on stopping the penalty stroke in hockey. The sub-objective of the study was to determine which way of cognitive training has better results for the improvement in stopping the penalty stroke in hockey. After thoroughly going through the literature it was hypothesized that there would be significant effect of both Mental Imagery Training and Tratak Kriya on stopping the penalty stroke conversion in hockey, while there would no significant difference between the both Mental Imagery Training and Tratak Kriya on stopping the penalty stroke conversion in hockey.

## III. PROCEDURE AND METHODOLOGY

The study was conducted on 150 male hockey players from Delhi, whose average of stopping the penalty stroke ranges from 3-5 out of 10 penalty strokes in 2 trials. The selected subjects were further randomly divided into three groups namely MIT (Mental Imagery Training Group) N = 50, TK (Tratak Kriya Group) N = 50 and CG (Control Group) N = 50. All the 3 groups did regular hockey training; followed by 20 minutes of mental imagery training (by MIT Group only) and tratak kriya training (by TK group only) for 3 days in a week and for 8 weeks respectively while Control group received the hockey training session only. Throughout the test, penalty strokes were taken alternately by two penalty strokes specialists (N=2) i.e. 5 strokes by each player. (2×5=10). Standard penalty stroke procedure was used as the criterion measure. All the three groups did hockey training for 3 days a week and for 8 weeks, while the MIT group and TK group did an extra 20 minutes session of Mental Imagery Training and Tratak Kriya respectively. To study the effect of MIT and TK on stopping of Penalty Stroke in hockey descriptive statistics (Mean & SD) and paired 't' test were employed. While One Way ANOVA was used to determine the significant difference between the groups. The MIT and TK guidelines as explained below:

### Mental Imagery Training

1. Get yourself into a comfortable position, make sure you will be warm and make sure you won't be disturbed.
2. Turn off your phone and loosen any tight clothing.
3. Now focus on your breathing.
4. Breathe easily and slowly.
5. As you breathe in allow your stomach to rise and extend. As you breathe out let your whole body relaxes. Breathe in-feel your stomach rise. Breathe out-relax. Breathe in-feel your stomach rise. Breathe out-relax. (Do 3 times). For the next 10 breaths, each time you breathe in feel your stomach rise-each time you breathe out think to yourself...relax...relax...relax (pause 10 breaths).
6. Let yourself relax. Feel the relaxation speed through your body. Breathe easily and slowly. Become aware of your feet. Move your toes slightly. Let them relax. Now think into your lower legs. Let your calf muscles totally relax. Think into your upper legs. Let them totally relax. Feel your legs sink into a completely relaxed state. Relax your behind (pause).
7. Focus on the muscles in your lower back. Think relaxation into those muscles. Feel that relaxation spread into your upper back. Feel your whole body sink into a deep state of relaxation. Now focus on your fingers. Feel them tingle slightly. Think warmth into your fingers. Let them totally relax. Relax your forearms, your upper arms, and your shoulders. Totally relax. Relax your neck (pause) and your jaw. Feel your head sink into a totally relaxed and comfortable position.
8. Scan your body for possible areas of tightness and relax those areas. Feel your entire body encircled with soothing warmth and relaxation. Enjoy this wonderful state of complete relaxation. (Pause 1 minute).
9. Feel yourself sink deeper into a calm and wonderful state of complete relaxation.

### Tratak Kriya

**Purpose:**The purpose of the test was to develop the concentration ability of the subjects.

**Materials Required:**Hockey Ball, Stop Watch and Table (18" to 20" high)

### **Administration of the test:**

1. The subjects were asked to sit firmly in one of the meditation posture with the head, neck and backbone remained, in a straight vertical line and motionless.
2. The subjects were instructed to breathe slowly and smoothly.
3. A hockey ball was placed on the 18" table level, about three feet away from the subjects.
4. The subjects were asked to look steadily at the centre of the hockey ball (the black spot marked on the ball) and concentrate on it.
5. The subjects were informed not to stare or gaze vacantly, instead of just looking steadily without straining their eyes.
6. **Note:** The subjects were made to gaze in a calm, relaxed manner, somewhat as they are looking their faces in the mirror.
7. After about a minute or when eyes become dry and painful, the subjects were asked to close their eyes and keep their inner gaze steady and visualized at the centre of the hockey ball (black spot) at aAjna or Anahata chakra or in the subject's mind eyes.

8. When the after image is vanished, the subjects were asked to open their eyes and the same process was administered, if possible.

IV. RESULTS

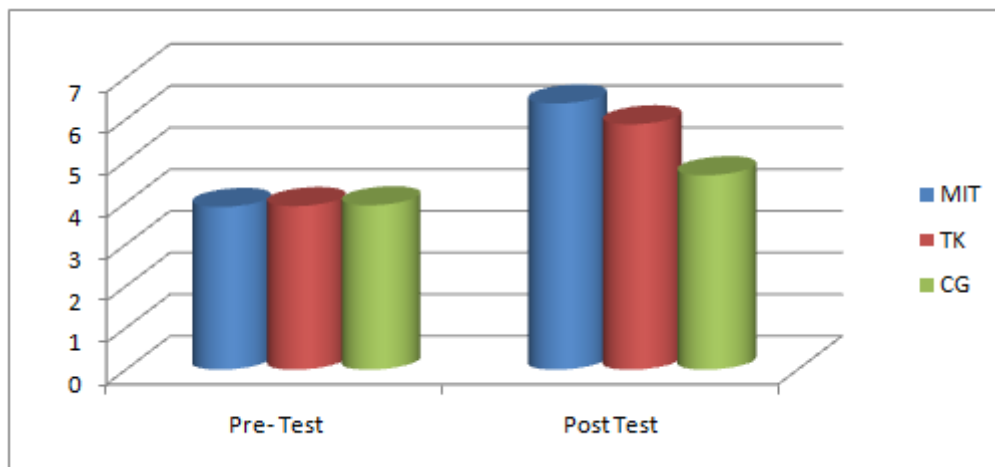
**Table- 1 Pre-test and Post- Test Scores of Stopping of Penalty Stroke in Hockey**

| Group                   |           | N  | Mean      | % Improvement | t      | Sig (2- tailed) |
|-------------------------|-----------|----|-----------|---------------|--------|-----------------|
| Mental Imagery Training | Pre test  | 50 | 3.90±0.76 |               |        |                 |
|                         | Post test | 50 | 6.38±1.19 | 63.59%        | 18.406 | 0.001           |
| Tratak Kriya            | Pre test  | 50 | 3.92±0.72 |               |        |                 |
|                         | Post test | 50 | 5.88±1.33 | 50.00%        | 14.984 | 0.001           |
| Control Group           | Pre test  | 50 | 3.94±0.71 |               |        |                 |
|                         | Post test | 50 | 4.66±1.02 | 18.27%        | 4.598  | 0.001           |

Note: N= Sample Size

Table-1 clearly reveals all the three groups i.e. mental imagery training group, tratak kriya group and control group had significantly improved over the period of 8 weeks. While among the three groups the highest improvement was seen in the mental imagery training group followed by tratak kriya group and control group as the % improvement was found to be 63.59%, 50.00% and 18.27% respectively.

**Fig 1: Effect of Mental Imagery training and Tratak Kriya on Stopping of Penalty Stroke in hockey**



**Table No. 2 One Way Analysis of the Post Scores of Stopping of Penalty Strokes in hockey**

|                | Sum of Squares | df  | Mean Square | F     | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 78.28          | 2   | 39.14       | 27.62 | .000 |
| Within Groups  | 208.28         | 147 | 1.41        |       |      |
| Total          | 286.56         | 149 |             |       |      |

Table- 2 indicates the values of one way analysis of variance, which shows that there was a significant difference in the selected group's i. e. Mental Imagery training group, Tratak Kriya Group & Control Group as the f' value was found to be 27.624 at p≤ 0.05.

**Table- 3 Post Hoc Analysis of the Post Scores of Stopping of Penalty Strokes in hockey**

| <b>(I) Group</b>     | <b>(J) Group</b> | <b>Mean Difference (I-J)</b> | <b>Std. Error</b> | <b>Sig.</b> |
|----------------------|------------------|------------------------------|-------------------|-------------|
| <b>Control Group</b> | <b>MIT Group</b> | -1.720*                      | 0.238             | 0.000       |
|                      | <b>TK Group</b>  | -1.220*                      | 0.238             | 0.000       |
| <b>TK Group</b>      | <b>MIT Group</b> | -0.500*                      | 0.238             | 0.037       |

\*. The mean difference is significant at the 0.05 level.

Table- 3 clearly reveals the LSD post hoc values of the post scores of stopping of penalty strokes in hockey showing that all the all the three groups were significantly differs after receiving the mental imagery training and tratak kriya.

#### V. CONCLUSION

The study concludes that cognitive trainings like mental imagery training and tratak kriya are very effective for stopping the penalty stroke in hockey and hence it can prove to be a use full training aspect for the making of a goal keeper in hockey.

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