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Effect of trataka (yogic visual concentration) on the performance of shooting players

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Abstract

Six cleansing practises are described in the ancient Indian yoga literature Hatha Yoga Pradipika. The goal of cleaning procedures is to cleanse and prepare the body for yoga postures, breath management, and meditation. One of these strategies is the yogic visual concentration technique (trataka). The present study planned to assess the immediate effect of trataka on the performance of 10m air pistol shooting players. For the purpose of the study, the researcher selected 40 players. These participants were randomly allocated to the groups formed i.e., experimental group and control group. Data was gathered both Pre and post of the treatment. The ANCOVA approach was used to analyse the data and produce the findings. The researcher has drawn the conclusion that trataka practise has favourable and significant benefits on shooting performance. Results reveal that after completion of 6 weeks study time period, the shooting ability of male air pistol shooters from experimental group was significantly higher as compared to male air pistol shooters from control group. It was concluded that 6 weeks specific yogic visual concentration program enhances shooting ability. The level of significance was set at 0.05.

Keywords: Yoga, trataka, shootings performance

Introduction

Yoga has been taught and practised in various forms around the world for thousands of years, with the ultimate objective being the unification of mind, body, and spirit. Yoga practise seeks to improve and maintain physical and mental wellness. Nowadays, yoga has become a popular system of exercise for wholesome development of personality by maintaining fitness and health. The Sanskrit term trataka's direct translation is "to gaze persistently." Trataka is the practise of gazing fixedly till tears are shed at a small place (Hata Yoga Pradipika, Ch: 2, V: 31). The final stage of trataka generates a contemplative state, despite the fact that it is recognised as a cleansing procedure. Over time, regular meditation practise enhances cognition, attention, and perception. Numerous studies have found that practising meditation improves one's ability to focus on a task. Shooting is a competitive and recreational sport that involves the testing of accuracy, exactness, and speed using firearms, rifles, and shotguns, among other things. Shooting, as a cumulative sport, can be divided into many disciplines, which can be dependent on equipment, shooting distance, targets, time constraints, and athleticism level. Trataka is a comprehensive method for aligning the body and mind so that harmony can be achieved, and it is traditionally regarded to result in a state of well-being. It is also extremely beneficial to athletes' performance. It may bring down the amount of anxiousness and boost the focus on the task in hand. Trataka practise enhances mind-body coordination, increasing accuracy in establishing harmony in perception and performance. Trataka (Yogic Visual concentration) is one of the cleansing techniques considered to enhance vision and positively influence cognitive processes. Since the process of Trataka involves focused attention on a candle flame, the practice leads to the mind becoming one-pointed and arouses inner vision (Muktibodhananda, 1999) [10]. Trataka has already been linked to improved performance in the Stroop Task (Raghavendra and Singh, 2016; Sherlee and David, 2020 [9, 14], Six Letter Cancellation, Trail Making tasks (Talwadkar *et al.*, 2014) [12], and Critical Flicker Fusion (Mallick and Kulkarni, 2010) [11]. Similarly, sheela found that 66 university students who also practised an IYM improved their sustained attention.

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Self-reported results on inattention and hyperactivity in high school children participating in a school-based yoga intervention have not before been investigated. Some studies suggest that yoga can help with inattention, and early intervention techniques that reduce attention deficit/hyperactivity disorder (ADHD) symptoms are important for positive outcomes an 8-year longitudinal study found that inattention and hyperactivity symptoms accurately predicted lower school retention rates, failure to graduate secondary school, and lower-level academic performance. Sethi *et al.* discovered that 60 low-income high school girls who participated in a 5-day integrated yoga module (IYM) enhanced their attention. Considering the earlier studies on Trataka and cognition, we hypothesize that Trataka may positively influence the performance of air pistol shooters. Shooting is a sport that requires accuracy, the ability to strike the target, and good coordination between the eye, brain, and muscles. The location of the mind is just as significant as the positioning of the body. The shooter must hold his breath and position himself comfortably during the shooting procedure so that the target can be hit. Breathing difficulties and other related concerns can be caused by a variety of circumstances, including pre-competition nervousness and high blood pressure.

As a result, performance may suffer. Panting may take the shooter's concentration away from the target and render the person unable to aim correctly at the target. Thus, trataka and meditation assist the individual in performing the work with precision. Control of emotions and the ability to focus more may lead to control of emotions, breath, and nerve currents in the body. (From the Hatha Yoga Pradipika.)

The current study sought to ascertain the effect of trataka practise on the shooting performance of junior level 10m air pistol shooters.

Inclusion and exclusion criteria

- The subjects, who were given a written consent to remain till the experiment over, were included.
- The people suffering from the various contagious diseases were excluded.
- Those who are not interested in the intervention, excluded.

Objectives of the study

The objectives were as follows:-

1. To characterize the performance of shooting players.
2. To compare adjusted mean score of the performance of trataka group and control group by covariate the pre scores of players.
3. To compare pre-test and post-test mean scores of performances of trataka group.

Material and Method

A total of 40 healthy 10m air pistol players were chosen at random and received instruction. All subjects had a baseline evaluation, followed by six weeks of Trataka training (including eye exercise). Each training session lasted 20 minutes, five days a week. All of the participants were frequently practising their shooting skills. The shooters had not engaged in any type of meditation or trataka practise before to the study. Participants volunteered to take part in the study, and coach and parents were kept in the loop. The participants received training at the A.R academy.

Trataka Session

Each Trataka session was 10 minutes long. The participants

sat comfortably on the floor in a cross-legged position during the activity. The procedure is divided into two sections. Each Trataka class began with a 4-5-minute session of eye exercises. These were done with the eyes open in the laboratory's well-lit, soundproofed recording room. Participants were asked to move their eyes in horizontal, vertical, diagonal, and circular directions throughout this stage. The second Trataka and Cognition stage involves gazing at a candle flame in a dark room, with the candle set at the participant's eye level at a distance of 2 metres. The participants were instructed to keep their gaze fixed on the candle flame for 2 to 3 minutes without blinking their eyes. They were then asked to close their eyes and imagine a candle burning between their brows. This procedure was performed three times. Subjects were afterwards instructed to defocus, and the activity ended in quiet with a prayer. This stage lasted a total of 10 minutes. To ensure consistency of practise among participants, a pre-recorded audio was employed.

Study Design

The system of organising the selection, testing, and analysis processes is known as experimental design. Administering the training, for example, is part of the study's designed blueprint, which aids in avoiding confounding variables' effects on the research study's findings. Pre-test and post-test design was employed in the study.

The experimental design's manifestation is as follows: -

- O Treatment (S1-S20) O
- O Control (S1-S20) O
- O = Observation S = Subjects

The design indicates that both groups will undergo a pre-test before the experimental protocol is initiated. Following the discontinuation of treatment, post-test data for all selected dependent variables were collected.

The dependent variable was Shooting Performance Each participant was given 40 attempts, with a maximum score of 10 each.

Trataka practise was the Independent Variable. The participants of experimental group practised trataka five days a week for six weeks.

Table 1: Schematic diagram of the experiment

Test (Pre, Post)	Control group	Experimental group
Test (Duration)	Pre-test 2 days	Pre-test 2 days
Training (Duration)	No training 6 weeks	Trataka sessions 6 weeks
Test (Duration)	Post-test 2 days	Post-test 2days

Statistical Analysis

The statistical analysis of data was done in accordance with the objectives of the present study. To evaluate the effect of 6 weeks of training designed for Trataka Group and Control Group on the Performance of Shooting Players. The data was analysed with the help of SPSS 23. Descriptive statistics i.e., mean and standard deviation was used to describe the nature of data. To test the significance if difference of mean values of control and experimental groups after eliminating the effect of covariates, ANCOVA was used. The level of significance was set at 0.05.

Results

Table 2: Descriptive Statistics of Trataka on performance of shooting players

Groups	Pre-Test		Post Test		Adjusted
	Mean	SD	Mean	SD	Mean
Trataka group	248.90	1.766	315.90	3.264	315.88
Control group	249.40	1.591	255.65	2.823	255.15

Table-2 revealed that pre-test mean, pre-test SD, post-test mean post-test SD and adjusted mean of two group namely one experiment group and one control group. The pre-test means and SD of control group was 249.40±1.5, pre-test mean and SD of Trataka group was 248.90 ±1.7 and post-test mean and SD of control group was 255.65 ±2.8, post-test mean and post-test SD of Trataka group was 315.90±3.3. The Adjusted mean of Control Group was 315.88 and the adjusted mean of Trataka Group was 255.15.

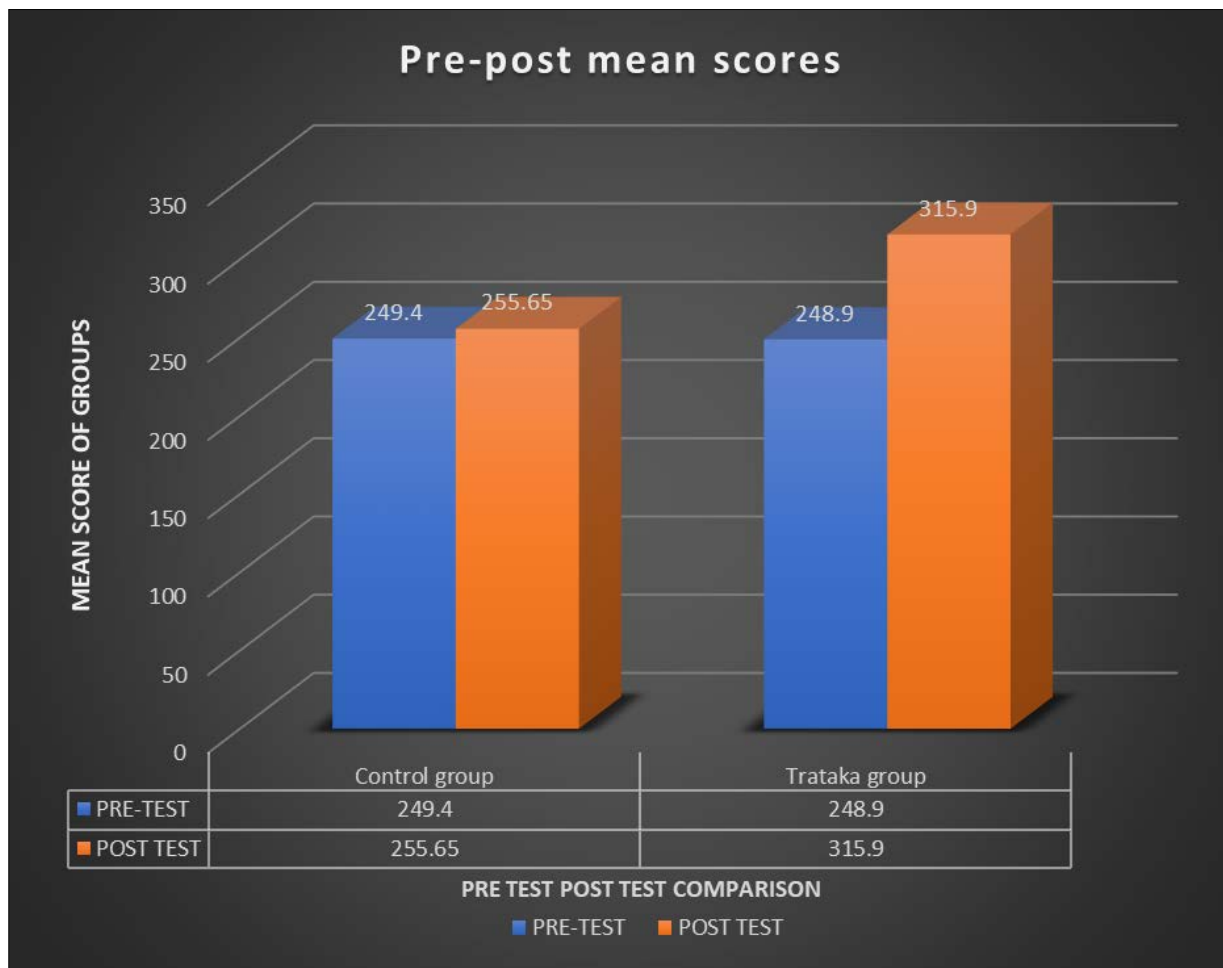


Fig 1: Graphical Representation of Pre-Post scores of Experimental and Control Groups

The result of post-test comparison of mean values of scores revealed that the mean value of experimental group is higher than the control group in the above graph. This indicates that

trataka exercise training was found effective in producing higher scores in the performance, which perhaps helped the players in enhancement of the final performance.

Table 3: Show Paired Difference, Mean, Standard Deviation, Standard Error Mean

	Paired Difference			T	DF	Sig. (2-tailed)
	Mean	Standard Deviation	Standard Error Mean			
Pair 1- Pre-Post-test of Trataka group	67.00	15.87	3.54	-18.87	19	.000

From Table-3, it can be seen that the Correlated T-Value is 18.87 which is significant at 0.05 level with DF = 19. It indicates that mean scores of Trataka on the performance of the shooting players at Pre-test and Post-test stages of treatment given was differ significantly. Thus, the null hypothesis that there is no significant difference in mean scores at Pre-test and Post-test stages of treatment given with the help of Trataka was rejected. Further, the mean score of performance after treatment through trataka is 315.00 which are significantly higher than the mean scores of performances before treatment whose mean score at Pre-test is 248.90. It may, therefore, be said that mean score of improved

performance of the shooting player’s significantly when treatment is given through Trataka.

Table 4: Summary of one way ANCOVA of Anxiety of female students of LNIPE by taking their pre-anxiety as covariates

Source of Variance	DF	SSy. x	MSSy. x	Fy. x	Sig.
Treatment	1	36363.43	36363.43	191.84	.000
Error	37	7013.04	189.54		
Total	40	3310073.00			

From table-4, it can be seen that the adjusted F -value is 191.84 which is significant. It indicates that there is a significant difference in adjusted mean scores of Shooting

players and Control Group players when their Pre-performance was taken as covariate. Thus, the null hypothesis that there is no significant difference in adjusted mean scores of performances of trataka group and Control Group players by considering their Pre-performance scores as covariate was rejected. It may, therefore, be said trataka group were found to have improvement in the performance when Pre-performance score was taken as Covariate.

Discussion and Finding

On the bases of the result of the study, it is found that there is significant effect of trataka practice in enhancement of performance of air pistol shooting players. The study's findings show that trataka practise has a considerable effect on the shooting performance of shooters. The strong effect of the specific training on shooting performance could be attributed to the effects of trataka, which aids in the development of focus and the restoration of balance between body and mind. Trataka practise may have resulted in better regulation of bodily processes such as blood pressure, heart rate, and adrenaline and cortisol hormone releases. When the trataka practise is done on a regular basis, the neuronal activity in the brain caused by factors such as anxiety and other social pressures decreases dramatically, resulting in the least amount of disturbance caused by parasympathetic nervous system dynamics. Many reports also revealed that participation in trataka exercise programme also contributes to increase performance in concentration-based games. It was, therefore, hypothesized that trataka exercises programme may facilitate to improve the shooting performance. The result revealed that trataka exercises training for a total duration of 6 weeks contributed to improve the final results among the air pistol shooters. Similar results were found in the study of Rakesh Datta (2019) ^[13] that was titled with "Effect of Trataka on the Shooting Performance of District Level Shooters" that there are positive and significant effects on shooting performance due to the trataka practice. In a study conducted by Kapil Kumar Sahu and Dr. Jai Shankar Yadav concluded that 06 months specific yogic exercise program enhances shooting ability of male archers.

Conclusions

In this study, the researcher concluded that trataka training had a favourable and significant effect on the shooting performance of junior level players. These results suggest that adopting trataka practice for 5 days a week for six weeks may increase shooting performance among 10m air pistol shooters. Future studies that include a larger number of participants and long-term follow-up are needed to ensure a sustained beneficial effect. According to the findings, higher education institutions in physical education, particularly sports schools, might consider adopting holistic practises such as yoga and meditation to assist student self-care.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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