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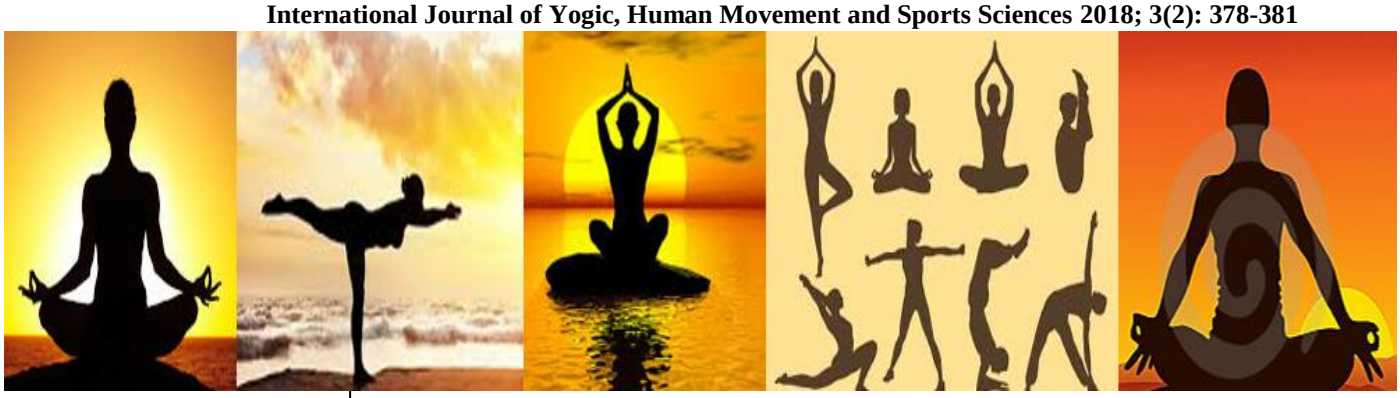

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Effect of Anapanasati meditation techniques on vigilance among the boxers of Chandigarh

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Abstract
The purpose of the study was to examine the effect of Anapanasati Meditation techniques on Vigilance among the boxers of Chandigarh. The method used for the study was an experimental method. The experimental design was be true experimental design in which pre-post randomized group design technique was adopted. The purpose of this research was to study the effect of Anapanasati Meditation on the Vigilance. A sample of 30 boxers was selected from the Boxing Academy, Sector-42, Chandigarh Administration, Chandigarh. The selected boxers was randomly distributed in two different groups i.e., Experimental Group (Anapanasati Meditation), and a control group. The training was given for the period of eight weeks. The results of the study shown that when comparing the post test of the two different groups i.e., Experimental group (Anapanasati Meditation) and the control group, it is found that the group given training for eight weeks have shown significant improvement than the control group.

Keywords: Anapanasati, meditation, vigilance and boxers

1. Introduction
Meditation practices have brought fruitful results in almost every sphere of life. Numerous researches have been conducted with this assumption that meditation helps in reducing and managing stress and anxiety. Apart from reducing stress meditation can also be used as a technique to develop attention. Archer (2017) [2] Studies have shown that it can strengthen the immune system, reduce stress, and increase feelings of well-being and even help preserve brain tissue (this last finding was reported in the November 28, 2005, issue of Neuroreport). In addition, says a recent study, meditation trains the mind to process information more efficiently, thereby improving practitioners' ability to pay attention to multiple stimuli while not in a meditative state.

Meditation is a mental training, which involves attention and the ability to maintain focus on a particular object. There are various meditational techniques which can be used to get benefits of it. Rani & Rao (1996) [12] indicated that Transcendental Meditation practitioners have greater attention regulation capacity than the people who do not practice this form of meditation. Elizabeth R. Valentine & Philip L.G. Sweet (1999) [4] concluded that Mindfulness meditation showed superior performance in comparison with other meditation techniques and also with those who do not practice any form of meditation. Giuseppe and Milos (2007) [5] examined how the regular practice of meditation may affect the normal age-related decline of cerebral gray matter volume and attentional performance observed in healthy individuals and concluded that the regular practice of meditation may have neuro protective effects and reduce the cognitive decline associated with normal aging. Elisa *et al.* (2011) suggests that mantra meditation training improves efficiency, possibly via improved sustained attention and impulse control.

Attention span in sports can be enhanced by various methods which have already been proved in various research studies. However role of attention have been studied and realised by all of us but the most important aspect which is equally important as important as attention is vigilance. Apart from having good attention span players need to have vigilance to excel in any sports. Vigilance is termed as persistent concentration; it is defined as an ability to maintain alertness for longer period of time. During this time, the person makes an effort to perceive the advent of a stimulus from particular target.

The individual watches for a signal stimulus that may occur at any unfamiliar time (Sternberg and Robert (2009). This usage of vigilance is probably closest to the common lay usage and to the English dictionary primary definitions of vigilance, e.g. 'state of being alertly watchful, especially to avoid danger' (Merriam-Webster [online], 2005). Vigilance refers here to the capacity to maintain attention over time and the ability to respond appropriately to relevant stimuli. Low levels of vigilance result in slow responses and even failures to respond to target stimuli. Open-skill sports, such as boxing, are performed in constantly changing environments. Athletes must be able to move in a variety of ways and adapt to rapidly changing situations. Boxing requires sustained attention (vigilance) because athletes must perform while in motion at near viewing distance from which most of the visual information is received. The attention adopted during the execution of a skilled motor action can have a profound effect on performance outcomes. Experimental data showed that optimal level of attention increases the perceptual sensitivity for the discrimination of target stimuli, reduces information processing time and improves decision-making processes in sport-specific targets. It has been speculated that one of the key factor affected the effectiveness of attention processes in sport is an expertise gained from participating in systematic exercise demanding high level of visual attention during fast motor responses to external stimuli. It is possible that the attentional skills adopted during the execution of an athlete's motor action in boxing training can transferred to other behaviors outside of sport as well as cognitive impairment such as attention, concentration and memory.

2. Methods

The method used for the study was an experimental method. The experimental design was be true experimental design in which pre-post randomized group design technique was adopted. The purpose of this research was to study the effect of independent variables i.e. Anapanasati Meditation on the dependent variable i.e. Vigilance. The study also intends to eliminate the effect of any antecedent variable (covariate) which may intervene in estimating the effect of independent variable on dependent variable. It was therefore hypothesised that there is no difference in the level of vigilance of the boxers prior and after the mantra training and there is no difference in the mean scores of post-test of the two groups on vigilance.

A sample of 30 boxers was selected from the Boxing Academy, Sector-42, Chandigarh Administration, Chandigarh. They were thoroughly explained the significance and purpose of the study. This subject were provided written assent in conjunction with written consent from their legal guarding or parents to participants in the study. All subjects were healthy and able to participate in regular training programme. The selected boxers was randomly distributed in two different groups i.e., Experimental Group (Anapanasati Meditation) and a control group. Each group was of fifteen boxers. The age of the boxers ranged from 18 to 20 years.

3. Tools

The variables selected for the present study were Anapanasati Meditation and Vigilance. The vigilance of the boxing players was assessed by using Cognitive Vigilance Task (CVT) constructed by Jitender Mohan (1980). The subjects were to encircle the adjoining two numbers, who are similar to each other, for the determination of correct signal. The score of the individual was equal to the number of correct responses, minus the incorrect. This is the most common measure used in the studies on vigilance performance where the number signals is to be detected correctly.

4. Protocol

To solve the purpose two different groups were randomly formed. The subjects were given one week familiarization session on Anapanasati training only to the experimental group. The protocol for the experimental group was established by a panel of three experts in the area of yoga. The training was given for the period of eight week (6 days in a week). One training session was of 45 minutes and the training use to be given after the evening training session. The qualified trainer was hired to give training to the subjects. To eliminate the placebo effect Blind fold method was used in which the trainer used to visit and spent 45 minutes with both the groups were the Anapanasati meditation was practiced by the boxers of experimental group and the boxers of control group were not given any training but use to have informal sessions with the expert.

5. Statistical Techniques

The paired t-test was used to compare the mean scores of pre and post-test on vigilance. Gokhale (1995) [1] finds in the experimental research pre-test and post-test were not parallel forms of the same test and the difference between the pre-test and post-test score is meaningless. The post-test score was used as the criterion variable. Therefore in the present study to compare the mean scores of post-test by keeping pre-test as covariate, Analysis of Co-variance (ANCOVA) technique was used. Since there were only two groups so no post hoc test was used. To test the hypotheses of the study the level of significance was set at 0.05.

6. Results

The raw data was organized, coded and recorded in the excel sheet, MS office 2007. The preliminary analysis was done by using Mean, Standard Deviation and Standard Error of Mean to understand the nature of sample. The Kolmogorov-Smirnov Test of Normality was used to see whether the data was normally distributed or not. The data was found normally distributed therefore; the parametric tests for further analysis were used. The observed facts in the sample was put to further analysis (Inferential Statistics) so that the facts observed in the sample can be tested for significance and assumption about the population can be made. The results of the study are discussed in the following tables with their explanation.

Table 1: Group wise N, Mean, SD, SED and t-value of male boxers on vigilance

Groups	Test	Mean	N	SD	SEM	t-Value	p-Value
Experimental Group	Pre-test	76.86	15	20.82	5.37	13.18	.000
	Post-test	138.46	15	27.98	7.22		
Control Group	Pre-test	93.13	15	16.41	4.23	12.90	.000
	Post-test	116.33	15	18.54	4.78		

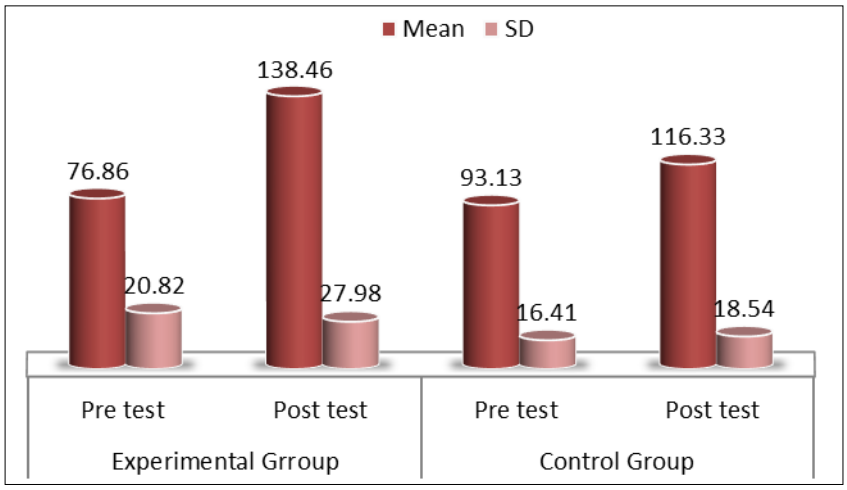

Fig 1: Showing mean values of boxers of two groups in pre and post-test on vigilance

From the above table it can be seen that the t-values are 13.18 and 12.90. These values are highly significant. It shows that the mean scores of male boxers of both the groups during pre-test and the mean scores of male boxers of both the groups during post-test on vigilance differ significantly. Hence the null hypothesis that there is no difference in the mean scores of male boxers of both the groups during pre-test and the mean scores of male boxers of both the groups during post-test on vigilance is rejected. Since the mean scores of male boxers during post-test of both the groups are significantly higher than the mean scores of male boxers during pre-test of both the groups on vigilance, it may therefore be said that both the groups have shown significant improvement in their vigilance.

Table 2: Descriptive statistics of male boxers from different training groups on vigilance

Groups	N	Mean	Std. Deviation	Adjusted Mean	Std. Error
Anapanasati Meditation group	15	138.46	27.98	148.67[a]	3.99
Control group	15	116.33	18.54	112.85[a]	3.83

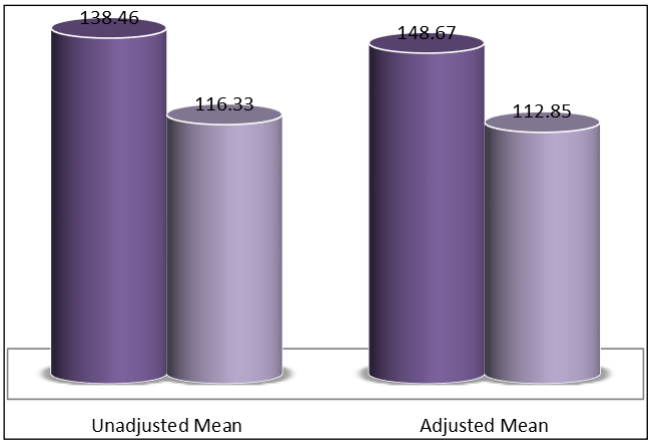

Fig 2: Showing values of unadjusted and adjusted mean of boxers from two groups during post-test on vigilance

The above table indicates that the mean values of Anapanasati meditation group and control group during post-test were 138.46 and 116.33 respectively and the standard deviations during post-test were 27.98 and 18.54 respectively. Further, the adjusted mean scores of the male boxers of Experimental Group (Anapanasati meditation) during the post-test on vigilance is 148.67 with the standard error is 3.99 and The adjusted mean scores of the male boxers of Control Group on vigilance during the post test is 112.85 with the standard error is 3.83, these adjusted mean values are different from that of the unadjusted values, it means that the effect of covariant (Pre Test) is eliminated in comparing the effectiveness of the treatment in the post testing.

Table 3: Analysis of Co-variance of the two groups during post-test on vigilance ability

Source	Type III Sum of Squares	DF	Mean Square	F	Sig.
Intercept	10813.66	1	10813.66	49.43	.000
PV	16981.04	1	16981.04	77.63	.000
Groups	12548.81	2	6274.40	28.68	.000
Error	8967.75	41	218.72		

Table no. 3 shows that the f - value is 28.68, on the basis of adjusted mean, of the two groups of male boxers during the post-test. The f-value 28.68 is significant at 0.05 level with the degree of freedom (1, 41). This shows that the mean scores of two group i.e. experimental group and control group differ significantly during post-test on vigilance. Hence the null hypothesis that there is no significant difference in the mean scores of two groups during post-test on vigilance is rejected. Since the boxers of experimental group have higher mean values than the boxers of control group on vigilance, it may therefore be said that the independent variable (Anapanasati meditation) have significant effect on dependent variable (vigilance).

7. Discussion and Conclusion

Our findings from a statistical standpoint indicated that vigilance during post-test i.e. after the training of eight weeks, in experimental group has been significantly increased. It

suggests that if the said protocol of Anapanasati meditation is followed for eight weeks it may increase the vigilance. Also it was observed that majority of the male boxers have demonstrated increase in their level of vigilance. Interestingly, the significant improvement in the level of vigilance was also seen in the male boxers of control group. This indicate that the apart from independent variable (Anapanasati meditation) some other extraneous variable have brought the changes in dependent variable (vigilance). Both the groups were identical throughout the experiment. The experimental group was only given Anapanasati meditation training in addition rest all the conditions were similar for both the groups. Proper care was taken when the boxers were divided into two groups. But the descriptive analysis suggests that the group were not identical when the pre-test was conducted. This may be the reason for the development seen in the control group.

Further the study also reveals that boxers of both the groups were different in their pre-test scores on vigilance i.e., before starting the training programme the groups were having different vigilance level. So the ANCOVA was used to eliminate the effect of pre training condition by keeping the scores of pre-test as covariate. The analysis suggests that when the mean scores of the boxers of experimental groups are significantly higher than the mean scores of the boxers of control group. It may therefore be said that the independent variable (Anapanasati meditation) have significantly improved the dependent variable (vigilance) of the boxers of Chandigarh.

A growing body of literature on the underlying mechanisms of meditation and vigilance suggest that meditation can increase the alertness among the sportspersons. However, to date, previous studies have only focused on various meditation techniques that may increase the attentional span of sportsman. The study adds to it by explain the effect of Anapanasati meditation and vigilance amongst the boxers. The study further adds to the literature that eight weeks of Anapanasati meditation is useful in developing vigilance.

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