



## EFFECT OF INVERTED YOGA PRACTICES AND BRAIN FITNESS EXERCISES ON EMPATHY OF COASTAL AREA SCHOOL STUDENTS

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**ABSTRACT** The purpose of the study was to find out the effect of inverted yoga practices and brain fitness exercises on empathy of coastal area school students. To achieve the purpose of the present study, sixty (n=60) coastal area school boys from St. Alphonsa Matriculation School, Nagarcovil, Kanyakumari District, Tamil Nadu, India were selected at random as subjects and their age ranged from 14 to 17 years. The subjects were divided into four equal groups of fifteen students each. Group I acted as Experimental Group I (Inverted Yogic Practices), Group II acted as Experimental Group II (Brain Fitness Exercises group), Group III acted as Experimental Group III (Combined training) and Group IV acted as Control Group. Pre test was conducted for all the subjects on empathy. The duration of experimental period was 12 weeks. After the experimental treatment, all sixty subjects were tested on empathy. This final test scores formed as post-test scores of the subjects. The pre test and post-test scores were subjected to statistical analysis using dependant 't' test and Analysis of Covariance (ANCOVA) to find out the significance among the mean differences. Whenever the 'F' ratio for adjusted test was found to be significant, scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The combined training group had shown significant improvement in all the empathy than the inverted yoga practices, brain fitness exercises group and control group.

**KEYWORDS :** Inverted Yogic Practices, Brain Fitness, Empathy, Coastal, School Students.

### INTRODUCTION

Yoga is a physical, mental, and spiritual discipline, originating in ancient India. The word "Yoga" came from the Sanskrit word "yuj" which means "to unite or integrate. Hence means 'union' between the mind, body and spirit. As the name suggests, the ultimate aim of practicing Yoga is to create a balance between the body and the mind and to attain self-enlightenment. Thereby creating a union between a person's own consciousness and the universal consciousness. Yoga may mean : Union; combination; sublimation; merging; attainment of the eternal bliss become oneness. Yoga enhances the intelligence, empowers the mind and makes the life pleasant.

Inverted asana reverse the action of gravity on the body; instead of everything being pulled towards the head. Generally, these practices improve health, reduce anxiety and stress, and increase self-confidence. They also increase mental power, concentration and the capacity to sustain large workloads without strain. Inverted asana encourage a rich supply of blood to flow to the brain, nourishing the neurons and flushing out toxins. Blood to the heart, then circulated in the lower limbs and abdomen, are drained back to the heart, then circulated to the lungs, purified and re-circulated to all parts of the body. This process nourishes the cells of the whole human organism. The enriched blood flow also allows the pituitary gland to operate more efficiently, turning the entire endocrine system. This has a positive effect on the metabolic process and even on ways of thinking.

The term brain fitness reflects a hypothesis that cognitive abilities can be maintained or improved by exercising the brain, in analogy to the way physical fitness is improved by exercising the body. Although there is strong evidence that aspects of brain structure remain plastic throughout life, and that high levels of mental activity are associated with reduced risks of age-related dementia, scientific support for the concept of "brain fitness" is limited.

Empathy has many different definitions that encompass a broad range of emotional states, including caring for other people and having a desire to help them; experiencing emotions that match another person's emotions; discerning what another person is thinking or feeling; and making less distinct the differences between the self and the other. It also is the ability to feel and share another person's emotions. Some believe that empathy involves the ability to match another's emotions, while others believe that empathy involves being tender-hearted toward another person.

Exercise plays an important role in one's health and wellness, and while often forgotten it absolutely applies to the brain. When the brain

is exercised, it helps prevent depreciation of one's mental faculties as they age. Like any other muscle in the body, the brain can be strengthened through the implementation of regular brain exercise. Brain fitness training changes the brain, provides a stimulating environment for the brain, develops a healthy brain and keeps the brain alert and active. The investigator would like to study the combined effect of inverted yoga practices and brain fitness exercises on empathy of coastal area school students.

### METHODOLOGY

The purpose of the study was to find out the effect of inverted yoga practices and brain fitness exercises on empathy of coastal area school students. To achieve the purpose of the present study, sixty (n=60) coastal area school boys from St. Alphonsa Matriculation School, Nagarcovil, Kanyakumari District, Tamil Nadu, India were selected at random as subjects and their age ranged from 14 to 17 years. The subjects were divided into four equal groups of fifteen students each. Group I acted as Experimental Group I (Inverted Yogic Practices), Group II acted as Experimental Group II (Brain Fitness Exercises group), Group III acted as Experimental Group III (Combined training) and Group IV acted as Control Group. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. Pre test was conducted for all the subjects on empathy. The duration of experimental period was 16 weeks. After the experimental treatment, all sixty subjects were tested on empathy. This final test scores formed as post-test scores of the subjects. The pre test and post-test scores were subjected to statistical analysis using dependant 't' test and Analysis of Covariance (ANCOVA) to find out the significance among the mean differences. Whenever the 'F' ratio for adjusted test was found to be significant, scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses.

### RESULTS

**TABLE - I COMPUTATION OF ANALYSIS OF COVARIANCE OF INVERTED YOGIC PRACTICES BRAIN FITNESS EXERCISES COMBINED TRAINING AND CONTROL GROUPSON EMPATHY**

	IYPG	BFEG	COT G	CG	Source of Vari- ance	Sum of Square s	df	Mea ns Squa res	F- ratio
Pre-Test	48.13	46.86	48.66	47.93	BG	25.66	3	8.55	1.30
Means					WG	367.73	56	6.56	

Post-Test Means	64.60	63.73	69.73	48.13	BG	3915.65	3	1305.21	161.28*
					WG	453.20	56	8.09	
Adjusted Post-Test Means	64.61	63.68	69.76	48.13	BG	3910.41	3	1303.47	158.42*

An examination of table - I indicated that the pre test means of inverted yogic practices, brain fitness exercises, combined training and control groups were 48.13, 46.86, 48.66 and 47.93 respectively. The obtained F-ratio for the pre-test was 1.30 and the table F-ratio was 2.76. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 56. This proved that there were no significant difference between the experimental and control groups indicating, that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the inverted yogic practices, brain fitness exercises, combined training and control groups were 64.60, 63.73, 69.73 and 48.13 respectively. The obtained F-ratio for the post-test was 161.28 and the table F-ratio was 2.76. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 56. This proved that the differences between the post-test means of the subjects were significant.

The adjusted post-test means of the inverted yogic practices, brain fitness exercises, combined training and control groups were 64.61, 63.68, 69.76 and 48.13 respectively. The obtained F-ratio for the adjusted post-test means was 158.42 and the table F-ratio was 2.77. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 55. This proved that there was a significant difference among the means due to the experimental trainings on empathy. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table-II

**TABLE – II THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST-TEST MEANS ON EMPATHY**

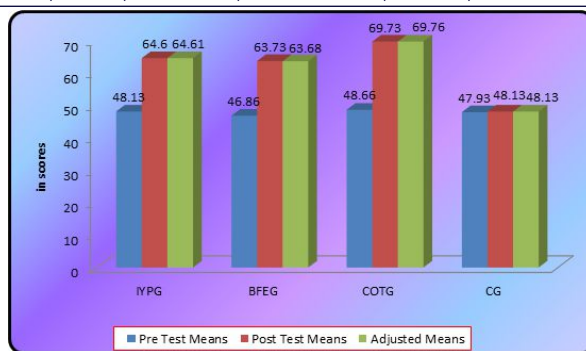
Adjusted Post-Test Means				Mean Difference	Confidence Interval
IYPG	BFEG	COTG	CG		
64.61	63.68	---	---	0.93	3.01
64.61	---	69.76	---	5.15*	
64.61	---	---	48.13	16.48*	
---	63.68	69.76	---	6.08*	
---	63.68	---	48.13	15.55*	
---	---	69.76	48.13	21.63*	
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\* Significant at 0.05 level

The multiple comparisons showed in Table II proved that there existed significant differences between the adjusted means of inverted yogic practices group and combined training group (5.15), inverted yogic practices group with control group (16.48), brain fitness exercises group with combined training group (6.08), brain fitness exercises group with control group (15.55) and combined training group and control group (21.63). There was no significant difference between inverted yogic practices group and brain fitness exercises group (0.93), at 0.05 level of confidence with the confidence interval value of 3.01.

The pre, post and adjusted means on empathy were presented through bar diagram for better understanding of the results of this study in Figure-I.

**FIGURE - I  
PRE POST AND ADJUSTED POST-TEST DIFFERENCES OF INVERTED YOGIC PRACTICES BRAIN FITNESS EXERCISES COMBINED TRAINING AND CONTROL GROUPS ON EMPATHY**



The results presented in table II showed that obtained adjusted means on empathy among combined training group was 69.76 followed by inverted yogic practices group with mean value of 64.61, followed by brain fitness exercises group with the mean value of 63.68 and control group with mean value of 48.13. The differences among pre-test scores, post-test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and the obtained F values were 1.30, 161.28 and 158.42 respectively. It was found that obtained F value on pre test scores were not significant and the obtained F values on post-test and adjusted means were significant at 0.05 level of confidence as these were greater than the required table F value of 2.76 and 2.77. The post hoc analysis through Scheffe's Confidence test proved that due to sixteen weeks training of inverted yogic practices, brain fitness exercises and combined training has improved empathy than the control group and the differences were significant at 0.05 level. Further, the post hoc analysis showed that there was significant differences exist between the experimental groups, clearly indicating that combined training group was significantly better than inverted yogic practices group, brain fitness exercises group and control group in improving empathy of the coastal area school boys.

**CONCLUSION**

The combined training group had shown significant improvement in all the empathy than the inverted yoga practices, brain fitness exercises group and control group.

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