



An Analysis of Certain Neurocognitive Functions: An Exploration through the Practice of Yoga

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Abstract

Yoga has been practiced for thousands of years. It is based on ancient theories, observations and principles of the mind-body connections. It reduces stress, rejuvenates us and improves circulation. It creates a balance in our physical and mental states. There were many studies on yoga and its effects on physical function but with the phenomenal and ever increasing popularity of yogic practices in the past few years there is a surprising lack of research in this specific area. This prompted us to undertake this study with the aim to assess the effects of yogic asanas on neurocognitive parameters. Data were collected on One Hundred and Twenty (N=120), subjects between the age group of 21-26 years were selected. The subjects from Group A were subjected to a 6-week yogic asanas training programme. It is concluded that, the 6-week training programme of yogic asanas had significant effect on Memory, Processing Speed, Executive Function, Psychomotor Speed, Reaction Time, Complex Attention and Cognitive Flexibility.

Keywords: Neurocognitive parameters, yoga.

Introduction

Yogic technique is Psycho-Physiological and if this conceptual background is not clearly understood, the whole outlook on yogic practices will be disturbed¹. Studies shows that for the development of various metabolic measurements and describe how one such measurement came to be known as the basal metabolic rate (BMR)^{2,3,4}. It is considered that yoga has become increasingly popular in other countries as a method for relaxation and coping with stress, anxiety and as a means of exercise⁵. This Practice and asans increase the secretion of melatonin which, in turn, might be responsible for perceived well-being⁶. It may be as beneficial and effective as or better

than exercise at improving a variety of physical, physiological and health-related outcome benefits⁷.

Material and Methods

Subjects of Subjects: One Hundred and Twenty (N=120), subjects between the age group of 21-26 years were selected. 6-week yogic asanas training were given to the subjects from the Group A.

Procedures: The yogic practices training programme was given to experimental group for 6-weeks of one session in the morning between 6.00 A.M. to 7.30 A.M for three days on Monday, Wednesday, and Friday.

Table-1
Yogic Practices Training Programme

Week	Yogasana positions	Intensity	Repetition	Set	Frequency Per Week	Each Asana	Rest in between asanas
1-2	Standing Postures	50%	12 times	4	3 days	2 minute	45 Seconds
3	Balancing Postures	60%	10 times	4	3 days	2 minute	45 Seconds
4	Arm-Balancing Postures	70%	8 times	4	3 days	2 minute	45 Seconds
5	Inverted Postures	80%	6 times	4	3 days	2 minute	45 Seconds
6	Backward-Bending Postures	85%	6 times	4	3 days	2 minute	45 Seconds

(RM –Repetition Maximum)

Table-2
Pre-Test and Post-Test Mean values (\pm SD), standard error of the mean and test statistic t on the Sub-Variable of Neurocognitive Parameters

Memory					
Groups		MEAN	SD	SEM	t-value
Experimental Group	Pre-Test	86.867	9.289	1.199	7.5370*
	Post-Test	88.650	9.388	1.212	
Control Group	Pre-Test	87.816	8.2513	1.0652	4.967*
	Post-Test	86.966	8.198	1.058	
Processing Speed					
Experimental Group	Pre-Test	54.666	15.571	2.010	14.108
	Post-Test	50.433	15.351	1.981	
Control Group	Pre-Test	55.200	13.862	1.789	.774
	Post-Test	55.066	13.248	1.710	
Executive Function					
Experimental Group	Pre-Test	35.000	19.658	2.537	13.285*
	Post-Test	38.133	18.770	2.423	
Control Group	Pre-Test	38.583	17.502	2.259	1.040
	Post-Test	38.733	16.787	2.167	
Psychomotor Speed					
Experimental Group	Pre-Test	1.661	21.637	2.793	11.014*
	Post-Test	1.600	20.754	2.679	
Control Group	Pre-Test	1.690	25.351	3.272	4.769*
	Post-Test	1.681	24.335	3.141	
Reaction Time					
Experimental Group	Pre-Test	6.721	109.713	14.163	5.827*
	Post-Test	6.643	109.069	14.080	
Control Group	Pre-Test	6.142	125.664	16.223	3.320*
	Post-Test	6.134	124.851	16.118	
Complex Attention					
Experimental Group	Pre-Test	14.833	9.889	1.276	27.206*
	Post-Test	17.566	9.937	1.282	
Control Group	Pre-Test	15.383	7.880	1.017	3.813*
	Post-Test	14.866	7.289	.941	
Cognitive Flexibility					
Experimental Group	Pre-Test	32.133	19.935	2.573	9.355*
	Post-Test	35.383	18.259	2.357	
Control Group	Pre-Test	33.533	16.802	2.169	5.655*
	Post-Test	32.350	15.515	2.003	

Statistical Technique Employed: Student's t-test were used to assessed the between group differences. The level of $p \leq 0.05$ was considered significant.

Results and Discussion

Memory: Table-1 The Pre-Test Mean Score of Experimental Group was 86.867 whereas Post-Test Mean Score was recorded as 88.650. The Pre-Test and Post-Test SD values were 9.289 and 9.388 respectively. The t-value 7.5370* was found to be statistically significant. The t-value 4.967* was found to be statistically significant as obtained t-value was found greater than the tabulated value 2.06.

Processing Speed: The Pre-Test Mean Score of Experimental Group was 54.666 whereas Post-Test Mean Score was recorded as 50.433. The Pre-Test and Post-Test SD values were 15.571 and 15.351 respectively. The t-value 14.108* was found to be statistically significant. The t-value .774 was found to be statistically insignificant as obtained t-value was found smaller than the tabulated value 2.06.

Executive Function: The Pre-Test Mean Score of Experimental Group was 35.000 whereas Post-Test Mean Score was recorded as 38.133. The Pre-Test and Post-Test SD values were 19.658 and 18.770 respectively. The t-value 13.285* was found to be statistically significant. The t-value 1.040 was found to be statistically insignificant as obtained t-value was found smaller than the tabulated value 2.06.

Psychomotor Speed: The Pre-Test Mean Score of Experimental Group was 1.661 whereas Post-Test Mean Score was recorded as 1.600. The Pre-Test and Post-Test SD values were 21.637 and 20.754 respectively. The t-value 11.014* was found to be statistically significant. The t-value 4.769* was found to be statistically significant as obtained t-value was found greater than the tabulated value 2.06.

Reaction Time: The Pre-Test Mean Score of Experimental Group was 6.721 whereas Post-Test Mean Score was recorded as 6.643. The Pre-Test and Post-Test SD values were 109.713 and 109.069 respectively. The t-value 5.827* was found to be statistically significant. The t-value 3.320* was found to be statistically significant as obtained t-value was found greater than the tabulated value 2.06.

Complex Attention: The Pre-Test Mean Score of Experimental Group was 14.833 whereas Post-Test Mean Score was recorded as 17.566. The Pre-Test and Post-Test SD values were 9.889 and 9.937 respectively. The t-value 27.206* was found to be statistically significant. The t-value 3.813* was found to be statistically significant as obtained t-value was found greater than the tabulated value 2.06.

Cognitive Flexibility: The Pre-Test Mean Score of Experimental Group was 32.133 whereas Post-Test Mean Score was recorded as 35.383. The Pre-Test and Post-Test SD values were 19.935 and 18.259 respectively. The t-value 9.355* was found to be statistically significant. The t-value 5.655* was found to be statistically significant as obtained t-value was found greater than the tabulated value 2.06.

Conclusion

Concludingly from the above findings that yogic asanas had significant effect on Memory, Processing Speed, Executive Function, Psychomotor Speed, Reaction Time, Complex Attention and Cognitive Flexibility.

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