

EFFECTIVENESS OF PRANAYAMA ON SUSTAINED ATTENTION AMONG ADOLESCENTS

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Abstract

A study was undertaken to assess the effectiveness of pranayama on sustained attention among adolescents in selected high schools within Dakshina Kannada District. A quasi-experimental control group design was implemented for this investigation, utilizing a non-probability purposive sampling technique to select samples. The study involved a population of adolescents aged between 14-16 years, with a sample size of 60. The data collected from the sample were subjected to both descriptive and inferential statistical analyses. Prior to the intervention, the Digit Letter Substitution Test, along with demographic data, was administered, and only the Digit Letter Substitution Test was employed post-intervention. The analysis revealed a highly significant difference between the mean pre-test and post-test sustained attention scores of adolescents who participated in pranayama intervention (t (cal) = 11.047, t (tab) = 2.0017, $p < 0.05$). This indicates a substantial improvement in sustained attention among the participants. The study's findings demonstrate the effectiveness of pranayama in enhancing sustained attention scores among adolescents. These results underscore the potential benefits of incorporating pranayama practices in educational settings to promote cognitive abilities, particularly sustained attention, in this age group. Further research with larger and diverse samples could provide additional insights and contribute to the generalizability of these findings.

Key words: Pranayama, sustained attention, adolescents.

Introduction:

Adolescence marks a crucial transitional phase between childhood and adulthood, characterized by significant biological, intellectual, psychosocial, and economic changes. This period witnesses the attainment of physical and sexual maturity, the development of advanced reasoning abilities, and the formulation of educational and occupational decisions that shape future adult trajectories¹

Success in any task necessitates focused attention and the concentration of energy on its execution. According to Woodworth, sustained attention involves the continuous concentration on an object, event, or problem. For adolescents, the ability to sustain attention is particularly pivotal for academic performance and overall success in their studies²

Attention processes serve as the cornerstone for various cognitive functions, including perception, learning, the establishment of working memory processes, and the active recall and integration of information. These processes play a crucial role in daily intellectual performance and are vital for acquiring competencies such as reading, spelling, and mathematical calculations, thereby influencing scholastic achievement.³

A study conducted at VYASA aimed to evaluate performance on the Six Letter Cancellation Task (SLCT) – a task involving visual selectivity and repetitive motor response – in forty male subjects before and after engaging in two yoga-based relaxation techniques: Cyclic Meditation (CM) and Supine Rest (SR). Both techniques, characterized by equal duration, demonstrated a significant improvement in net scores ($P < 0.001$). Notably, CM resulted in a greater change (26%) compared to SR (14%). These findings suggest that yoga, particularly CM, enhances sustained attention and positively influences task performance.⁴ This study contributes valuable insights into the potential benefits of yoga practices on cognitive functions and sustained attention, shedding light on their relevance in promoting overall well-being, particularly in educational contexts. Further research may explore the broader implications of incorporating such practices into adolescent routines to optimize cognitive performance and academic achievement.⁴

Title of the study: Effectiveness of pranayama on sustained attention among adolescents in selected high schools

The objectives of the study were to

1. assess the pre-test level of sustained attention among adolescents in the experimental and control group.
2. evaluate the effectiveness of pranayama on the level of sustained attention among experimental group.
3. compare the effectiveness of pranayama on sustained attention between experimental and control group.
4. find out the association between pre-test level of sustained attention and selected demographic variables.

Methodology:

Quantitative research approach was used, where, quasi experimental control group design was used. Sample size was calculated by Study sample consists of 60 adolescents (30 each for experimental and control group) of selected high schools of Moodbidri, Karnataka. Based on previous study, by **Pradhan B, Nagendra H**, sample size was selected. Simple random sampling was used by lottery method, where 30 adolescents were selected in control and 30 in experimental group. During pre-test Sociodemographic data were collected and applied digit letter substitution test among adolescents.

Sustained attention was dependent variable and Pranayama was independent variable, which included - bhastrica, anuloma-viloma and brahmari pranayama for 15 to 20 minutes till 60 days among adolescents in experimental group. And for control group it was explained them to use any method which improves sustained attention. On day 61st day post test was conducted by using digit letter substitution test.

Results:

Table 1: socio-demographic data

N=60

SL No	Variables	Experimental		Control group		Total	
		F	%	f	%	f	%
1	Age in years						
a.	14	6	20	2	6.7	8	13.3
b.	15	18	60	26	86.7	44	73.3
c.	16	6	20	2	6.66	8	13.3
2	Sex						
a.	Male	21	70	12	40	33	55
b.	Female	9	30	18	60	27	45
3	Religion						
a.	Hindu	20	66.7	14	46.7	34	56.7
b.	Christian	4	13.3	12	40	16	26.7
c.	Muslim	5	16.7	4	13.3	9	15
d.	Jain	1	3.3	0	0	1	1.6
4	Occupation of the father						
a.	Govt employee	2	6.7	3	10	5	8.3
b.	Private employee	1	3.3	1	3.3	2	3.3
c.	Self employed	6	20	4	13.3	10	16.7
d.	Others	21	70	22	73.3	43	71.7
5	Occupation of the mother						
a.	Govt employee	0	0	0	0	0	0
b.	Private employee	14	46.7	0	0	14	23.3
c.	Self employed	0	0	1	3.3	1	1.7
d.	Others	16	53.3	29	96.7	45	75
6	Monthly income of the family in rupees						
a.	≤ 5000	20	66.7	15	50	35	58.3
b.	5001-10,000	7	23.3	7	23.3	14	23.3
c.	10,001-15,000	2	6.7	4	13.3	6	10
d.	> 15,000	1	3.3	4	13.3	5	8.3
7	Type of diet						
a.	Vegetarian	4	13.3	0	0	4	6.7
b.	Mixed	26	86.7	30	100	56	93.3
8	What is your most favorable hobby ?						
a.	Listening to music	6	20	9	30	15	25
b.	playing	15	50	11	36.66	26	43.3
c.	Reading books	5	16.7	2	6.7	7	11.7
d.	Watching TV	3	10	6	20	9	15
e.	Others	1	3.3	2	6.7	3	5
9	Do you allocate time for leisure activity ?						
a.	Yes	30	100	30	100	60	100
b.	No	0	0	0	0	0	0
	If yes specify						
a.	Music	3	10	5	16.7	8	13.3
b.	Meditation	0	0	0	0	0	0
c.	Play	6	20	12	40	18	30
d.	Others	21	70	13	43.3	34	56.7

Findings of the study revealed that in the pre-test, majority of subjects (66.7%) had good sustained attention and 30% of subjects had average sustained attention and only 3.3% subjects had excellent

sustained attention while in the post test majority of subjects (70%) had good sustained attention and 30% of subjects had subjects had excellent sustained attention. On the other hand, in control

group during pre-test majority of subjects (66.7%) had good sustained attention and 33.3% subjects had average sustained attention, whereas in post test majority of

subjects (60%) had good sustained attention and 40% subjects had average sustained attention.

Table 2: Mean, standard deviation (SD), mean difference, and 't' value of experimental group and control group.

n=30+30

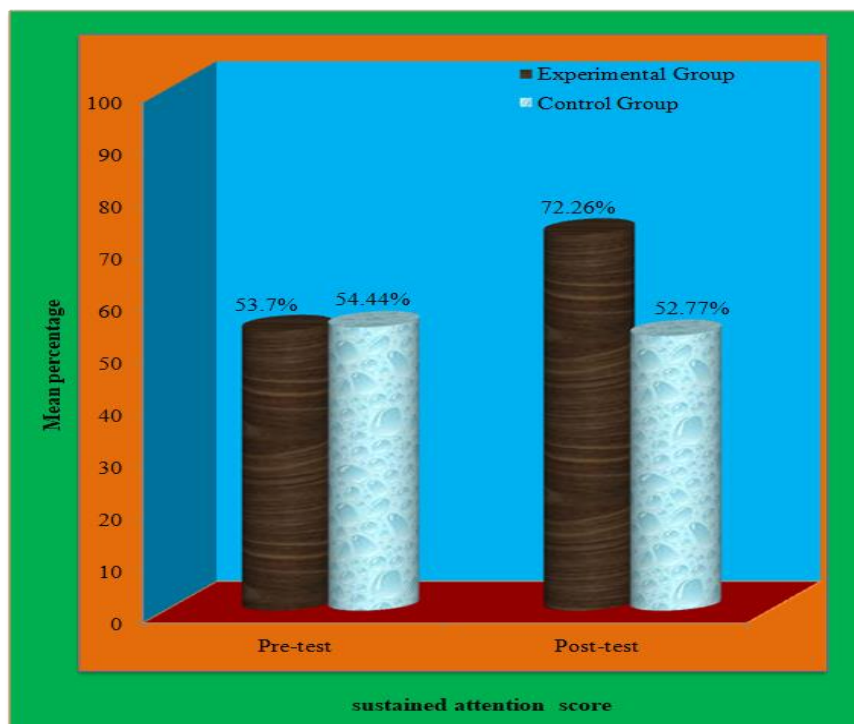
Group	Paired differences		Mean difference	Std error difference	t' value	Remark
	Mean	S.D				
Exp-Group	15.233	7.219	16.600	1.502	11.047	Significant
Control-Group	1.4	3.95				

$t_{(58)} = 2.0017$ $p < 0.05$,

The findings of the study revealed that there was significant difference between the mean pre-test and post-test sustained attention scores. The mean percentage of post-test sustained attention score (72.26%) was found to be higher than the mean percentage of pre-test sustained

attention score (53.7%). And the 't' value computed was highly significant ($t_{(cal)} = 11.431$, $t_{(tab)} = 2.0452$, $p < 0.05$). This finding showed that the pranayama was effective in increasing the sustained attention among adolescents.

Fig 1: pre-test and post-test sustained attention scores among experimental and control group.



The findings of the present study revealed that the 't' value computed was highly significant ($t_{(cal)} = 11.047$, $t_{(tab)} = 2.0017$, $p < 0.05$). It shows that there was much increase in sustained attention among the experimental group as compared to the control group.

The findings of the study also showed that there was no significant association between pre-test sustained attention score and demographic variables such as age, sex, religion, occupation of father and mother, monthly income of the father and mother, hobby and leisure time activity.

Conclusion:

Based on the study findings, it can be conclusively affirmed that pranayama

A study was conducted to understand the cognitive changes of two different integrated modules on 61 school students of both gender aged between 14 to 17 years. They were randomly assigned to two groups – IAYM (Integrated approach of Yoga Module) (n=28) and I.Q.(Intelligent quotient) (n=33). Both groups were trained in specific yoga modules for 10 days at Vivekananda Yoga Research foundation, Bangalore; Test of cognition (attention and concentration) was administered. Comparison pre and post values showed that there was a significant improvement ($P < 0.001$) in both groups. Cognitive effect improved in I.Q. group by 12.75% and IAYM group by 8.27%. The impact of the study indicates significant improvement on concentration, attention and memory³⁶.

proved to be effective in enhancing the sustained attention scores among adolescents. This implies the potential utility of incorporating pranayama practices in educational settings to foster cognitive abilities, particularly sustained attention, among this age group. The outcomes of this research contribute valuable insights to the growing body of literature on the beneficial effects of mindfulness practices, such as pranayama, on cognitive functions, emphasizing their relevance in educational and adolescent health contexts. Further research with larger and diverse samples could provide additional depth and generalizability to these findings.

(Pradhan B, Nagendra H. Immediate effect of two yoga-based relaxation techniques on attention in children. Int J Yoga. 2010 Jul; 3(2):67-9.39)

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