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The effect of yoga practices on cognitive development in rural residential school children in Kerala

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Abstract

Objective: To study the effect of yoga practices on selected cognitive development variables among adolescent rural residential school children. Materials and **Methods:** Eighty two students, age ranged from 11-15 years, were randomly divided into experimental (n=41) and control (n=41) groups. Selected cognitive development variables were evaluated at the baseline and at the end of 6 weeks of yoga training in both groups. **Results:** Significant improvement was observed in measures of mental ability and memory in experimental group. However, no statistically significant changes were observed in measures of mental ability and memory tests in control group. **Conclusion:** Selected cognitive development variables were improved after 6 weeks of yoga training in adolescent rural residential school children.
Key words: Yoga practices, cognitive development, rural residential, residential school.

1. Introduction

Mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community." It can also be defined as a state of emotional and psychological well-being in which an individual is able to use his or her cognitive and emotional capabilities, function in society, and meet the ordinary demands of everyday life. Cognitive performance refers to a person's mental processes, including memory, attention, producing and understanding language, learning, problem solving, reasoning, and decision making. Cognitive development starts in early adolescence and is influenced by many factors such as postnatal psychosocial environment , poverty, malnutrition , family stressors, environmental stressors , and maternal depression. Adolescent rural children are more likely to be subjected to poor socioeconomic conditions as compared to urban adolescent children. Poor quality of home environment can adversely affect children's development, leading to cognitive deficits. Findings of one study suggested that the experience of persistent economic hardship, as well as, very early poverty undermines cognitive functioning at five years of age. However, according to a recent experimental research, both acute and chronic aerobic exercise promotes children's executive function. goal-directed cognition and behavior which develop across childhood and adolescence . In this context, ancient traditional practice of yoga might be helpful in improving mental health and thus cognitive development. The Sanskrit term yoga means "the union of the individual self (Jiva-atman) with transcendental self (Parama- atman)". The word 'Yoga' is derived from the Sanskrit root verb "Yuj" means bind, make union, control. Patanjali defines yoga as the "restriction of the wheels of consciousness and paths of ecstatic self-transcendence or methodical transmutation of consciousness to the point of liberation from the spell of ego personality". Yoga has multiple physical, mental and spiritual benefits and holds that the influence of the mind on body is far more powerful than the influence of body on mind.

2. Materials and Method

2.1 Subjects

Eighty two school children, aged 11 to 15 years (13.02±1.24) studying in 5th to 9th grade in a rural residential school, participated in this study. All the students belonged to different rural areas of Maharashtra, India. Written permission to conduct this study was obtained from the Department of physical education, Kerala University, Thiruvananthapuram of this research study. Written consent was obtained from the guardian of the students after explaining the aims and the objectives of the research study.. There were 41 students in each group at the baseline testing. However, at the end of 6 weeks, there were 37 students in Experimental Group and 34 students in Control group because of 11 drop-outs. Drop-outs were due to various reasons, mainly disinterest, academic pressure, illness and absence during either pretesting or post-testing. All the students who participated in the research study were in apparent good health.

2.2 Research design

Quasi experimental pre post design was used for conducting this research study. The students were randomly assigned into Experimental Group (n=41) and Control (n=41) group by Chit method for random selection. Both Experimental and Control group were assessed on the first day and after 6 wks of the intervention. The subjects of Experimental Group then underwent a training of yoga practices, under the supervision of a yoga expert, for one hour in the morning, excluding Saturdays, Sundays and holidays for a total period of 6 weeks. The Control group did not undergo any yoga training during this period. However, both the groups continued to participate in their regular extracurricular activities during school hours.

2.3 Psychological Assessment

The following tests were administered to the children:

A test battery of Cognition Function tests (CFTs), an Indian adaptation based on Guilford's Structure of Intellect Model, devised by Jnana Prabodhini's Institute of Psychology, Pune, India was administered on each student. This test was suitable for use in children of 11-15 yrs of age. Standard methods were

2.4 Statistical Analysis

Followed for the data extraction for each of the variables (mentioned above). Data was analyzed using paired t-tests, independent t- test and descriptive statistical method. The mean values ± SD of pre and post variables are presented in (Table - 1).

Variables	Experimental Group		Control Group	
	Baseline (M±SD)	Final (M±SD)	Baseline (M±SD)	Final (M±SD)
Mental Ability Test 1(CFC)	6 ±2.06	6 .54 ±1.79	5.32 ± 2.32*	6.30 ± 2
Test 2(CFS)	3.97 ± 2.08	48 ± 2.31	3.32 ±1.92	3.92 ±2.24
Test 3 (NFC)	6.74 ±2.78	7.34±2.7	6.46 ±2.84	7.22 ±2.81
Test 4 (EFC)	5.57 ±2.39	6.83 ± 2.73**	5.30 ±2.74	5.97 ±2.92
Test 5 (NFR)	3.54 ±3.16	3.74 ± 3.55	3.05 ±2.68	4.05 ±2.66
Test 6 (NFS)	7.17 ±3.14	7.83 ± 2.95	6.86 ±2.91	7.35 ±3.03
Test 7 (EFR)	1 0. 0 9 ± 2.64	10.17 ± 2.32	9.30 ±3.36	10. 22 ± 2.91
Test 8 (EFS)	1 0 .2 6 ± 2.68	10.94 ± 2.91	9.92 ±2.98	10.73 ±3
Test 9 (EFI)	6.91 ±2.16	6.97 ± 2.56	6.54 ±2.80	6.24 ±2.89
Memory Test 1 (MFC)	7.00 ±2.59	7.91 ± 2.17*	7.46 ±2.41	7.73 ±2.06
Test 2 (MSC)	8.77 ±4.04	9.94 ± 5.01	9.32 ±4.35	9.84 ±4.57
Test 3 (MMR)	7.17 ±3.93	7.66 ± 3.51	6.84 ±3.88	6.95 ±3.92
Test 4 (MBC)	7.06 ±3.14	7.51 ± 3.67	6.97 ±3.44	7.51 ±3.04

Table/Fig-1]: Pre test and post test mean & S.D. values of selected variables after 12 weeks of yoga training *p<0.05, **p<0.01.

3. Result

3.1 Mental Ability Test

The result showed that at the baseline there were no significant differences in all the parameters between groups. In case of within group comparison, experimental group showed significant improvement in two of the nine factors, i.e. Cognition of Figural Systems (CFS) (p<0.05) and Evaluation of Figural Classes (EFC) (p<0.01).These factors refer to ability to structure a system by joining parts of a figure considering appropriate directions and ability to make judgement regarding adequacy of a figure as member of certain class respectively. Surprisingly, control group also showed significant improvement in two of the nine factors, Cognition of Figural Classes (CFC) (p<0.05) and Convergent

Production of Figural Relation (NFR) ($p<0.05$). These factors refer to ability to recognise or understand common attributes among figures and classify them accordingly and ability to identify relations among presented figures and apply the same to other figures. The remaining factors of mental ability test did not showed any significant difference in both experimental and control groups.

3.2 Memory Test

In memory test experimental group showed significant improvement in 'Test-1' ($p<0.05$) which includes memory of figural information. Remaining three tests, which do not show improvement, include memory of information in the form of symbols, language or behaviour. Control group did not show significant improvement in any of the memory tests.

4. Discussion

The findings of this 12wk research study suggests, amply, the effectiveness of yoga training in improving primary cognitive processes such as attention , perception and observation. Overall findings shows that observation and critical evaluation of figural information improved in experimental group which could be result of maturation and intervention. The result of our study is also in line with previous research findings. According to a recent finding, yoga practices improved memory and general well-being of the experimental group subjects. Control group also showed improvement in understanding and logical thinking which could be result of maturation and in part due to the practice effect over time. The findings of memory tests indicate intervention probably has affected primary processing of visual inputs and not higher order processing. According to a study, shorter duration of yoga training does not influence the cognitive development of students. Within limitations, the findings of this study demonstrate that shorter duration of yoga intervention is beneficial in improving some of the mental ability and memory parameters. In fact, future investigations on larger population and longer period of follow up are necessary to establish and expand the results of present study.

5. Conclusion

The present study has demonstrated that yoga training probably has affected primary cognitive processes such as attention, perception and observation. Yoga, being a simple and inexpensive health regimen, can be incorporated as an effective adjuvant therapy to governmental child health initiatives in school curriculum, and thus, ensures a bright future for our children. Further studies on a larger scale and longer time period would be required to further substantiate these findings.

6. References

[1]. http://www.medicalnewstoday.com/articles/261667.php
[2]. http://www.thefreedictionary.com/mental+health
[3]. Laude M. (1999). Assessment of nutritional status, cognitive development, and mother-child interaction in Central American refugee children. Rev Panam Salud Publica, 6,164-71.
[4]. Park, J.M., Fertig, A.R., Allison, P.D. (2011). Physical and mental health, cognitive development, and health care use by housing status of low-income young children in 20 American cities: a prospective cohort study. Am. J Public Health, 101(1), S255-61.
[5]. Stromswold, K. Biological and psychosocial factors affect linguistic and cognitive development differently: A twin study. Proceedings of the Annual Boston University Conference on Language Development, 2, 595-606.
[6]. World Health Organization. [Internet]. Fact sheet no. 220. 2001. Strengthening mental health promotion. Geneva. http:// www.who.int/mediacentre/factsheets/fs220/en/

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