



Impact of Yoga and Meditation on Cognitive Functions of Students

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ABSTRACT: Yoga, an ancient Indian system of thought as well as practice is very pertinent to the treatment and prevention of psychological disorders, as well as the maintenance and promotion of physical and psychological well-being. Yoga focuses on retraining or educating the mental processes. Meditation has been used in recent years to help people attain health, cure diseases, and useful in many kind of health related problems. Taken together, this system provides a way of life that enhances a sense of well-being in people. The present study was an attempt to explore impact of yoga and meditation on cognitive functions of students. Results obtained in the study shows that there are significant differences were present in the yoga practicing students than non-yoga practicing students.

Keywords: Yoga, Meditation, Cognitive functions, Students.

1. INTRODUCTION

Yoga defined as 'way of life', is characterized by balance, health, harmony and bliss. The holistic practice of yoga includes ethical, physical, emotional, and mental discipline as well as the attainment of enlightenment. (Burkett, 2006). Apart from achieving physical health through breathing techniques and asanas, the psychological benefits of yoga include the ability to maintain cognitive control, especially in the areas of attention, concentration and memory. Meditation is the process of training one's attention to either focus on one thing (e.g., breath, a mantra) or to notice and observe external and internal sensations without judgment-or both.

Yoga and meditation practice has been found to have positive effects on physical fitness, mood, anxiety level and cognitive functioning (Abadi & Venkatesan, 2008; Berger & Owen 1992; Subrahmanya & Telles, 2009). Regular practice of yoga is implicated in the healthy development of the body, mind and spirit, leading to a more fulfilling life (Bhole, 1983). Specifically, inverted yoga positions have been associated with claims of increased memory and attention due to increase blood flow to the brain. Schaeffer (2002) claimed that yoga can prevent memory lapses and enhance concentration. It can also improve powers of recall by increasing circulation to brain. Anantharaman and Kabir (1984) reported the beneficial effect of yoga practices on attention, concentration and memory.

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Sahasi (1984) found that practicing yoga/meditation improves memory and attention in children. Another study (Peck, Kehle, Bray, & Theodore, 2005) found that children had improved functions on measures of attention after practicing yoga. Modern cognitive psychology describes attention as the ongoing process of filtering out information from the perceived environment and of focusing on specific elements (Ashcraft, 2005; Goldstein, 2007).

Valentine and Sweet (1999) have repeated that there was statistically significant increase in attention test scores after mindfulness meditation, and concentrated mediation sessions. Concentration is the cognitive process of selectively paying attention to one thing to the exclusion of other a period of time. Dolde (2011) reported that yoga produce positive changes in concentration, energy and wellbeing.

Memory is the ability to recall or remember past events or previously learnt information or skills. Amitand Neelam (2012) conducted a study on adolescents which showed that the adolescents who practice yoga have had higher concentration levels and exhibited better short term memory. Despite the facilitatory role of yoga and meditation on our day-to-day activities, cognitive functions and well-being, the practice of yoga has not yet become a regular part of our curriculum. Recently a number of schools have come forward to introduce yoga and its daily practice a compulsory elements of schooling.

The present study is undertaken among the students of such a school, with a view to find out the impact of regular yoga and meditation upon the cognitive functions of students.

2. Method

The main aim of the study was to explore impact of yoga and meditation on cognitive functions of students. The participants of the study (N=102) comprised of two groups of students studying in 7, 8, and 9 standards belonging to two unaided schools in Ernakulam district. The participants in the main sample (N=51; Boys=30; Girls=21) have been practicing yoga and meditation daily at school from first standard onwards. The comparison group was matched with respect to age, sex and class of study of the main sample. However, they were not practicing yoga and meditation.

In addition to the Personal Data Sheet, The Paced Auditory Serial Test (PASAT) developed by Gronwall and Sampson (1974) along with the Work Recognition Test (WRT) which measures verbal episodic memory in the category of short term memory (Badeley, Eruslie, & Nimmo-Smith,1994) were used to collect data. The Letter Digit Substitution Test (LSDT) developed by Jolles (1995) is also used to evaluate the general speed of visual information processing, complex cognitive speed and flexibility.

3. Results and Discussion

The mean scores in the cognitive functions obtained by the two groups of students(yoga and meditation practitioners and non- practitioners) were computed and the differences were tested for significance using the 't' test, (Table 1)

Table 1: Means and SD's of the scores obtained by the yoga two groups of students in each of the four cognitive tasks and corresponding t values.

Variables	Yoga and Meditation practicing students (N=51)		Non-practising students(N=51)		
	Mean	SD	Mean	SD	't'
Attention and Concentration	69.06	18.69	48.69	17.86	5.81**
Working memory	68.88	14.39	57.83	22.35	3.02**
Visual information processing and working memory	44.51	19.42	27.76	5.94	6.25**
Complex cognitive speed and flexibility	41.96	9.16	36.03	8.77	3.45**

**significant at the 0.01 level

Variables	Medth	PASAT	WRT	LSDT1	LSDT2
PASAT	-.490**	1	.593**	396**	341**
WRT	-.280**		1	227**	245**
LSDT1	-.517**			1	584**
LSDT2	-.316**				1

The results presented in Table 1 shows that in each of the cognitive functions, the yoga and meditation practicing group is having significances higher mean scores than the non- practicing group. It is clear that the students have been practicing yoga and meditation daily have very high scores in cognitive functions than the matched group of students who do not practice yoga or meditation. This is true in the case of attention and concentration, working memory, visual information processing and working memory, and complex cognitive speed and flexibility. Practicing yoga and meditation improves the functioning capacity of the brain. A study (Bini, Sangeetha, & Joseph, 2012) with same sample found that children had better mental health and psychological empowerment than non-practitioners.

The results obtained in this study are in line with the findings that are reported by complementary researchers on meditation. For example, it was report that neural synchrony, in particular in the gamma-band frequencies (25-70Hz), influence mental processes such as attention, working memory, learning or conscious perception. Such synchronizations of oscillatory neural discharges are through to play a crucial role in the constitution of transient networks that integrate distributed neural processes into highly ordered cognitive and affective functions (Singer,1999; Varela et al., 2001).

Sara Lazar and her associates (2005) reported that meditation practice is associated with changes in the brain's physical structure. Brain regions associated with attention and sensory processing were thickere in meditation participants than matched controls. Linden (1973) found

that regular practice of meditation is associated with a significant enhancement of attentive ability. Pagano and Frumkin (1977) reported that meditators demonstrated enhanced ability to remember and discriminate musical tones. The present study has consistency with the findings of Verma et al., (1982) that the meditation practitioners showed statistically improvement in coding tasks.

8. Conclusion

In general, previous studies have revealed higher levels of attention, concentration, and memory for yoga practitioners than the non-practicing adolescents, Children who practice yoga enjoy better health, temperament, discipline, behavior, concentration, memory and stamina (Ali & Brar, 2002). The results of the study showed better performance with practice of yoga and meditation in tangibly enhancing cognitive performance pertaining to higher level cognitive skills of: sustained and divided attention and concentration, short term memory, visual information processing and working memory, and complex cognitive speed and flexibility over that of non-practicing students.

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