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Effect of yoga for cognitive enhancement

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Abstract

Preliminary studies suggest that yoga practice may result in improved cognitive performance, among other potential benefits in healthy adults. Twenty participants (20 males) were recruited by contacting instructors of psychology and exercise science classes in addition to recruitment announcements in the fitness centre at Govt. Higher Secondary School Boys, Anantnag. They were then allowed to practice of one 60-minute yoga session per day, 6 days in a week 3 months. The results of this study suggest that a brief yoga program incorporating mindfulness meditation may offer an improvement in WM functioning and enhance attentive mindfulness. The current study adds to the limited amount of research available regarding yoga training as a potential method for cognitive enhancement. Future studies should ideally employ a randomized control trial, incorporating broader neuropsychological batteries to enhance our understanding regarding the strength and extent of the cognitive enhancing effects of yoga. Furthermore, although our group's baseline cognitive performance was in the normative range, future studies should include samples associated with deficient cognitive functioning and psychopathology.

Keywords: yoga, cognitive, enhancement

Introduction

There has been significant interest in cognitive enhancement in recent years, including several investigations of the potential cognitive benefits of computerized cognitive training. Several variables may promote this trend, including the increased availability of cognitive programs; extended life span and subsequent increase in the prevalence of elderly experiencing cognitive decline; and the increased prevalence of attention deficit. However, a recent meta-analysis on the efficacy of computer-based cognitive training programs indicates minimal effects on cognition and behaviour. For these reasons, researchers have begun to explore cognitive enhancement via mindfulness training, yoga, and meditation. Preliminary studies suggest that yoga practice may result in improved cognitive performance, among other potential benefits in healthy adults. Indeed, a meta-analysis of both short- and long- term effects indicates that yoga practice is associated with improvement in cognitive functioning generally in both long-term and short-term studies, with medium effect sizes reported in short-term studies' measures of attention and processing speed and executive functioning. However, as the limited number of studies and the heterogeneous use of cognitive tests indicate, evidence for cognitive improvement via yoga practice should be considered preliminary.

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) [7]. 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.

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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. 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 meditation 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.

Method

The main aim of the study was to effect of yoga for cognitive enhancement. Twenty participants (20 males) were recruited by contacting instructors of psychology and exercise science classes in addition to recruitment announcements in the fitness centre at Govt. Higher Secondary School Boys, Anantnag. They were then allowed to practice of one 60-minute yoga session per day, 6 days in a week 3 months. t – test was used to calculated the collected data at 0.05 level of significant.

Result and Discussion

A significant improvement was found on the DSF score. No significant interaction effect was found for treatment × past yoga experience. A significant improvement was found on the DSB score. No significant interaction effect was found for treatment × past yoga experience. In order to assess change in mindfulness, we conducted a repeated measure ANOVA between the two administrations of the MAAS. Results revealed a significant change on this scale. Furthermore, change in the MAAS score was not correlated with change in any of the cognitive outcomes. This outcome is similar to another study that found no significant correlations between MAAS and WM task performance pre- to post- mindfulness training. Speculatively, it is possible that yoga enhances WM function without any conscious effort on the part of participants, but mindfulness requires active conscious effort to be present and alert to one's surroundings. These potentially different mechanisms may explain how yoga would improve both WM and mindfulness independently, such that measures involving these processes may be uncorrelated. Overall, our results are consistent with previous

studies that reported improved WM and executive function performance following yoga training. Furthermore, incorporating mindfulness practice in the present yoga program results in increased mindfulness that has been associated with increased WM function, increased wellbeing, decreased stress, and decreased mood disturbance. Although the specific mechanism underlying the positive effect yoga practice has on WM is unclear, previous research documents that alongside a host of psychological and physiological benefits of yoga, yoga practice leads to substantial neurobiological and psychophysiological alterations. Some studies indicate that yoga practice enhances parasympathetic system activity.

Conclusion

The results of this study suggest that a brief yoga program incorporating mindfulness meditation may offer an improvement in WM functioning and enhance attentive mindfulness. The current study adds to the limited amount of research available regarding yoga training as a potential method for cognitive enhancement. Future studies should ideally employ a randomized control trial, incorporating broader neuropsychological batteries to enhance our understanding regarding the strength and extent of the cognitive enhancing effects of yoga. Furthermore, although our group's baseline cognitive performance was in the normative range, future studies should include samples associated with deficient cognitive functioning and psychopathology.

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