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Differential impact of Shavasana and meditation on memory scores in healthy college students: A randomized controlled study

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ABSTRACT

Background: Yogic relaxation techniques endow its practitioners with the relaxation of *Citta* (i.e., mind, intellect, and ego) and freedom from psycho-physiological fatigue.

Objectives: The purpose of the present study was to compare the differential impact of the guided instructions in Shavasana and meditation in supine posture on verbal, spatial, and associate memory scores.

Research Design: This was a randomized controlled trial.

Method: Randomly selected 45 healthy college students were equally divided into meditation group ($n = 15$), Shavasana group ($n = 15$), and control group ($n = 15$), with age range of 22–30 years. All individuals were assessed for total memory through Wechsler Memory Scale before and after the 30-day intervention of yoga, consisting of two types of relaxation techniques (Shavasana and meditation in supine posture). The sessions were of 30 min each for both the intervention groups for 6 days a week.

Results: Results showed significant changes in memory scores among meditation and Shavasana groups as compared to the control group. Meditation group had shown a higher magnitude of change as compared to the other groups. Within-group comparison revealed significant changes in memory scores in both meditation ($P < 0.001$) as well as in Shavasana ($P < 0.01$) groups.

Conclusion: This study has concluded that the guided relaxation techniques of yoga could bring a deeper relaxation at the psycho-physiological level which, in turn, could bring about a deeper impact at higher psychological levels resulting into significant improvement in verbal, spatial, and associate memory scores.

Key Words: Guided instructions, memory scores, Shavasana, *Shiva Samhita*, subjective experiences, supine meditation, Wechsler Memory Scale

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INTRODUCTION

Literally, a dead pose, Shavasana, is one of the foremost yogic relaxation techniques, eulogized in *Hatha Pradipika* as the technique that endows its practitioners with the relaxation of *Citta* (i.e., mind, intellect, and ego) and freedom

from psycho-physiological fatigue (Digambar & Kokaje, 1998). Shavasana, thus, endows one with the psycho-physiological relaxation and tranquility of consciousness,

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indicating the phenomenon of transcendence. Though etymological, an asana is generally held as a prerequisite to higher yoga practices and therefore virtually equated with yoga meditation. Brahmananda's commentary of *Hatha Pradipika* emphasizes its utility in doing away with physical exertion resulting from *Hatha Yoga* practices (Maheshananda, Sharma, Sahay, & Bodhe, 2002).

Dhyana is defined as "One-pointed and sustained objective comprehension of the object of meditation" (Karambelkar, 1987). Even though *Bhagwat Gita* and *Patanjali Yoga Sutra* speak many a condition and effect of *Dhyana*, they do not describe any specific meditational technique. *Vijnana Bhairava Tantra* speaks of more than a hundred meditative practices. *Shiva Samhita* describes a technique of meditation that can be practiced in supine posture (V: 69-70). It claims to endow its practitioners with an instant annihilation of tiredness and makes them conquer death (Maheshananda, 2007). As both of these interventions are fully comparable in respect of their instructions, nature of their practice, and psycho-physiological implications, it was thought worthwhile to undertake a comparative study of these interventions in respect of their impact on higher psychological processes.

Even though scriptural claims regarding Shavasana and supine meditation do not make clear as to which of these techniques is more effective in availing a better psycho-physiological health and harmony, meditation (*Dhyana*), being placed higher in the scheme of *Patanjali's Ashtanga Yoga*, has clearly the element of transcendence in a more pronounced degree than that of Shavasana. Therefore, meditation, by virtue of being capable of bringing about *Prasada*, i.e., absolute joy, may benefit its practitioners more than that of Shavasana, on the psycho-physiological plane. *Bhagwat Gita* (II: 65) states, "the *Prasada* annihilates all kinds of miseries and consequently the very consciousness becomes blissful resulting into the intellect getting soon well established and stabilized." There is, therefore, every possibility that higher psychological processes and mental abilities may be influenced favorably due to meditation. Memory, being one of the foremost mental abilities, may be enhanced significantly due to the meditation practice.

Memory is one of the most important component of intelligence. Therefore, present investigators thought it pertinent to investigate the effects of selected interventions on memory, using Wechsler Memory Scale, standardized for its use in Indian population. In fact, previous research studies amply point out an efficacy of these practices on various psycho-physiological parameters. Gharote (1971) found that energy expenditure, during a session of meditation for 45 min, showed a significant progressive reduction from 37 to 29.7 kcal/m²/h. Work output in terms of finger ergography after Shavasana was significantly less in comparison to ordinary rest for the same period, indicating reduction in neuromuscular activity than

muscle fatigue (Paranjape & Bhole, 1979). Yogic relaxation-cum-meditation for 5 min was found to overcome the induced anxiety and frustration manifested on the tone, size, shape, and mucosal pattern of the stomach in studies with barium meal (Bhole, 1983). In another study by Pedro (1984), relaxation in Shavasana was found to improve the emotional control and cardiovascular adaptation in 35 healthy yoga college students. A definite favorable effect of Shavasana was evident in a U.S. Air Force aviator (Brownstein & Dembert, 1989). Electroencephalography rhythms have been studied by the modern researchers when prominent high-amplitude slow or fast alpha was recorded during different types of meditation practices indicating relaxed and alert wakefulness. Bhogal, Bhat, Kulkarni, & Bera (1999) have reported a significant reduction in reaction times (simple visual reaction time, disjunctive visual reaction time, disjunctive auditory reaction time and simple auditory reaction time) as well as a significant reduction in red blood cells (RBCs) and triglycerides due to yoga meditation that was preceded by *Omkar*, in ten healthy college students, signifying an increased rate of information processing. Lazar et al. (2005) have found interoception and sensory processing becoming thicker, in meditation participants than matched controls, including the prefrontal cortex and right anterior insula. Lachnitt & Bhogal (2006) have shown that meditative experiences deepened significantly in 23 meditators over a period of 19 days as compared to that of the matched nonmeditators engaged in their routine yoga program. The effect of 12-week training of transcendental meditation had improved mental health, independent of age, sex, and marital status (Yunesian, Aslani, Vash, & Yazdi, 2008).

In more recent times, there have been some important studies undertaken in Shavasana and meditative practices. Sarang & Telles (2007) have found a greater magnitude of significant increase in memory scores in the meditation group as compared to the Shavasana group. Roberts-Wolfe, Sacchet, Hastings, Roth, & Britton (2012) found that mindfulness training altered emotional memory recall, whereby meditators showed a greater increase in positive word recall. Long-term concentrative meditation was found to show a better performance on cognitive performance. Mindfulness meditation had a faster and less variable response to working memory, as compared to controls (van Vugt & Jha, 2011). The review of the published literature clearly implicates yogic relaxation practices to affective and cognitive aspects of human personality. Of the various studies above, the studies by Sarang & Telles (2006) as well as by Lachnitt & Bhogal (2006) have compared meditative relaxation effects with the effects of other nonmeditative yogic relaxation techniques. One can easily discern that the practices compared, in both the studies above, do not qualify for a fully justifiable comparison, in view of their differential *a priori* informational contents. In the former study, Shavasana, a practice with a classical posture of relaxation, has been compared with cyclic meditation, a

combination of supine relaxation and yogic postures; while in the latter study, a supine meditation practice has been compared with dynamic-type yoga program.

The investigators of this study, therefore, selected the practices which are tolerably comparable with respect to the basic *a priori* informational contents as regards the nature of their performance. Both the practices, in this study, use a supine posture. As well, both have a tolerably comparable meditative element in them. Thus, the present study, potentially, has a promise to throw some more light on the nature of meditation and Shavasana, with respect to their distinct directions and effects. Thus, the study, in all probabilities, may have its therapeutic implications too.

Bhogal et al. (1999) have indicated an increased information processing, probably, due to direct regulation of ion channels by fatty acids, independent of phosphorylation evident in significantly reduced reaction times along with a marginal decrease in RBCs as a result of a 4-week daily practice of the supine meditation in ten students of a yoga college. Therefore, this study was conducted with a view to see whether there is any differential effect of the meditation-in-supine posture and Shavasana practice on the scores of memory and to assess the correspondence, if any, of the subjective remarks/feedback with the effects, if any, on the memory scores.

MATERIALS AND METHOD

Randomly selected 45 student volunteers of D.Y. Ed. (2012–2013), both males and females in the age range of 22–30 years, were equally divided into three groups, namely, Experimental-I, Experimental-II, and control, with identical number of study participants ($n = 15$) in each group. All the three groups, matched with age, educational qualification, and socioeconomic status, were tested before and after the intervention period of 1 month. Students who were not confident to continue due to their minor health-related complaints were excluded from the study. Study participants from Experimental-I and Experimental-II groups underwent 30-day training in meditation in supine posture and Shavasana, respectively, while controls were free to practice their own relaxation methods if they wish but were asked to relax for the equal time duration, i.e., 30 min, just like that of the other two groups. All the three groups were given interventions as follows: every morning in three different halls with expert instructors having years of experience or having a formal training from reputed institutions.

Written consent from the participants as well as approval from the Ethical Committee of the institute were readily taken before the initial testing session. The Shavasana group was having 3 months of training prior to the initiation of the project while the meditation group was not having any experience with the supine meditation.

Nature of the intervention

- Instructions of meditation in supine posture have been developed by the first author, based on the *Shiva Samhita* (V: 69-70) method of supine meditation. The guided instructions require one to allow their eyes to get closed effortlessly before assuming a lying supine posture in Shavasana. One is then instructed to become aware of all the body parts, by part and whole method, from within and without, before going on to have a subjective awareness and feel of the entire frame of the body. Here, the practitioners are instructed to maintain the subjective awareness and feel for a while before they have an objectless and self-existent joy or an out-of-the-world joy occurring to them in the most natural and spontaneous way. They were given simple tips to maintain the joy before they experience an ecstatic joy coming their way.
- Instructions in Shavasana followed the method given by Swami (1966), whereby a step-by-step development of the body awareness and the breath awareness associated with happenings on the body level is emphasized.
- Instructions in the control group were minimal in the sense that the only instruction given to them was as follows: please relax with your own method of instruction except following Shavasana or other techniques that you might have learned from experts in the field, but see that you do not go to sleep. The same instructions were repeated to the participants for every 10 min to prevent them from drifting into imageries and thoughts.

Assessment tool

Wechsler Memory Scale was used to assess memory performance of the study participants. The scale consisted of digit span forward and backward and verbal-paired associate learning (easy and hard) with 10 items each. Test sheets were scored by a person from another department. The person, scoring the data sheets, was not aware as to whether he/she was scoring pretest sheets or posttest sheets.

RESULTS AND DISCUSSION

Within-group comparison in meditation group shows a significant increase ($P < 0.001$) in total memory scores following the intervention period of 1 month [Table 1]. Further, Shavasana group also showed statistically significant increase in total memory scores ($P < 0.01$). However, the magnitude of increase in memory scores of meditation group was superior to that of the Shavasana group. It is

Table 1: Total memory scores

Groups	Mean \pm SD	
	Pre	Post
Meditation	82.77 \pm 16.09	89.69 \pm 15.90***
Shavasana	81.81 \pm 16.63	87.38 \pm 12.20**
Control	82.15 \pm 13.46	83.15 \pm 12.72

*** $P < 0.001$, ** $P < 0.01$. SD, Standard deviation

noteworthy that there was no significant change in memory scores of control group [Figure 1].

Between-group comparison showed no statistically significant changes even though there was a marginal difference evident in favor of the meditation group. Particularly, the fact is noteworthy that the meditation group did not have any exposure to the supine meditation previously. In fact, there is a need to conduct control studies with larger sample size to substantiate the effectiveness of meditation practices in supine posture.

The analysis of feedback received from the participants after 1 month of training intervention showed that there was a difference in the experience of ecstatic joy, a kind of joy which is objectless and self-existent in nature unlike the responses of the Shavasana group, which did not report such joyful experiences. The subjective expressions largely corroborate the statement of Smith (1989) who asserts that subjective experiences in meditation session give a message, *I am centered; I am at peace*, instead of *I am relaxed and comfortable*. Probably, the passivity and receptivity of approach, as an outcome of meditative experiences, makes mind-brain behavior more focused, resulting in enhancement of memory.

CONCLUSION

It can be concluded that the *Shiva Samhita*-based supine meditation practice has enhanced the memory scores in college students, plausibly, due to cathartic effect evident during the process of meditation. Cathartic effect might have resulted in a better registration and a better subsequent retrieval. Further studies with different groups can alone give conclusive evidence of a clear-cut utility of the *Shiva Samhita*-based meditation technique. Hence, it is recommended that different memory enhancement tools can be tried to see the efficacy of the meditation technique.

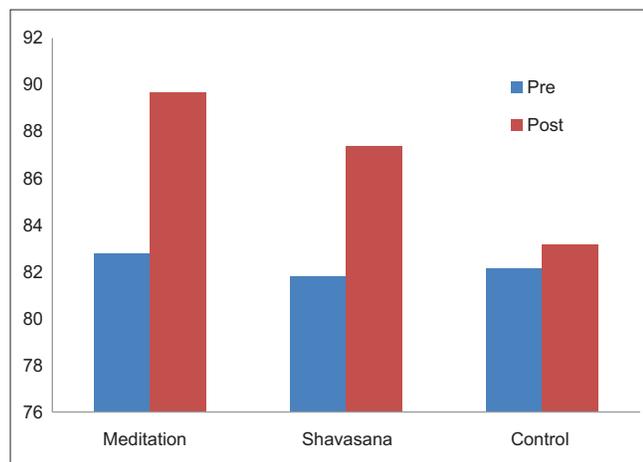


Figure 1: Total memory scores at the baseline and after intervention

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Bhogal, R. S., Bhat, S. G., Kulkarni, D. D., & Bera, T. K. (1999). Effect of meditation, similar to the one mentioned in *Shiva Samhita*, preceded by *Omkar* on reaction time and selected biochemical and haematological parameters: A pilot study. *Yoga Mimamsa*, 33 (4), 10-28.
- Bhole, M. V. (1983). Gastric tone as influenced by mental states and meditation. *Yoga Mimamsa*, 22 (1 & 2), 54-58.
- Brownstein, A. H., & Dembert, M. L. (1989). Treatment of essential hypertension with yoga relaxation therapy in a USAF aviator: A case report. *Aviation, Space, and Environmental Medicine*, 60 (7), 684-687.
- Digambar, S., & Kokaje, R. S. (1998). *Hathapradipika of Svastmarama*. Lonavla: Kaivalyadhama S. M. Y. M. Samiti.
- Gharote, M. L. (1971). Energy expenditure during deep meditative state. *Yoga Mimamsa*, 14 (1 & 2), 57-62.
- Karambelkar, P. V. (1987). *Patanjala Yoga Sutra*. Lonavla: Kaivalyadhama S. M. Y. M. Samiti.
- Lachnitt, K., & Bhogal, R. S. (2006). *Differential effects of integral meditation in comparison with that of body-oriented practices of hatha yoga*. Proceedings of the 5th International Conference on Advances in Yoga Research, Education & Therapy. Lonavla, India: Kaivalyadhama S. M. Y. M. Samiti.
- Lazar, S. W., Kerr, C. E., Wasserman, R. H., Gray, J. R., Greve, D. N., & Treadway, M. T., ... Fischl, B. (2005). Meditation experience is associated with cortical thickness. *Neuroreport*, 16 (17), 1893-1897.
- Maheshananda, S. (2007). *Shiva Samhita*. Lonavla: Kaivalyadhama S. M. Y. M. Samiti.
- Maheshananda, S., Sharma, B. R., Sahay, G. S., & Bodhe, R. K. (2002). *Hathapradipika Jyotsna of Brahmananda*. Lonavla: Kaivalyadhama S. M. Y. M. Samiti.
- Paranjape, S. D., & Bhole, M. V. (1979). Resting neuromuscular activity as influenced long term yogic training. *Yoga Mimamsa*, 19 (4), 18-26.
- Pedro, D. M. (1984). Emotion and heart rhythm as influenced with yoga. *Yoga Mimamsa*, 23 (2), 1-22.
- Roberts-Wolfe, D., Sacchet, M. D., Hastings, E., Roth, H., & Britton, W. (2012). Mindfulness training alters emotional memory recall compared to active controls: Support for an emotional information processing model of mindfulness. *Frontiers in Human Neuroscience*, 6, 15.
- Sarang, P. S., & Telles, S. (2006). Oxygen consumption and respiration during and after two yoga relaxation techniques. *Applied Psychophysiology and Biofeedback*, 31 (2), 143-153.
- Sarang, S. P., & Telles, S. (2007). Immediate effect of two yoga based relaxation techniques on performance in a letter-cancellation task. *Perceptual and Motor Skills*, 105 (2), 379-385.
- Smith, J. C. (1989). *Cognitive Behavioral Model of Relaxation Training: Theory and Practice*. New York: Wiley.
- Swami, K. (1966). *Asana*. Lonavla: Kaivalyadhama S. M. Y. M. Samiti.
- van Vugt, M. K., & Jha, A. P. (2011). Investigating the impact of mindfulness meditation training on working memory: Mathematical modeling approach. *Cognitive, Affective and Behavioral Neuroscience*, 11 (3), 344-353.
- Yunesian, M., Aslani, A., Vash, J. H., & Yazdi, A. B. (2008). Effects of transcendental meditation on mental health: A before-after study. *Clinical Practice and Epidemiology in Mental Health*, 4, 25.