

## Expt: Yoga and Geriatric Care: an Evaluation of Positive Health Indicators

By  
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### Abstract

#### Background

There have been no randomized controlled trials to evaluate Yoga or Ayurveda for the promotion of positive health in a geriatric population measuring various indicators of aging.

#### Aims

The present trial was conducted to evaluate the effects of Yoga and of Ayurveda as compared with a Wait-list Control group of older persons. The assessments included (i) general health measures, (ii) neurological and (iii) psychological variables.

#### Methods

After screening ninety persons of both sexes over sixty years of age, staying in an old age home, sixty-nine persons were selected for the trial. They were randomized as three groups, Yoga, Ayurveda and a Wait-list Control group. Assessments of all three groups were made at baseline and after three and six months. The assessments were of three categories i.e., (i) measures of general health and of (ii) neurological and (iii) psychological status. The Yoga group practiced a combination of Yoga techniques including physical postures, breathing exercises, guided relaxation and a devotional session, for sixty minutes a day, six days a week. The Ayurveda group received a special preparation called *rasayana kalpa*, given as ten grams, twice a day. The Wait-list Control group was given no specific intervention and continued with their routine activities. The data were analyzed using repeated measures ANOVA and paired t-test for comparisons between (i) baseline and three months and (ii) baseline and six months.

## **Results**

At the end of three months the Yoga group showed an improvement in minute ventilation, aspects of memory based on the Wechsler memory scale (e.g., semantic memory and primary and working short-term memory). There was also an improvement in depression scores and self-rated quality of sleep. The Ayurveda group showed an improvement in minute ventilation. The scores for short term primary memory were also improved in both the Ayurveda and the Wait-list Control groups. The Wait-list Control group also showed two changes suggestive of a deterioration viz., a decrease in right hand grip strength and an increase in skin conductance (as sympathetic dominance is a known consequence of aging).

At the end of six months the Yoga group showed an improvement in forced vital capacity, minute ventilation, autonomic status, scores for gait and balance, and mobility (based on a “timed-up-and-go test”). There were also improvements in various aspects of memory based on the Wechsler memory scale such as semantic memory, primary and working short-term memory and episodic memory. The depression scores and self rated quality of sleep also improved. The Ayurveda group showed an improvement in maximum voluntary ventilation and in mobility based on the “timed-up-and-go test”. The Wait-list Control group showed signs of deterioration at six months based on a decrease in forced vital capacity, mid-arm circumference and in scores for episodic memory. The results mentioned above were all significant at the .05 level (t-test for paired data). Those results which were not significant have not been mentioned.

The differences between groups was significant (based on Repeated Measures ANOVA) for: forced vital capacity, hand grip strength, skin conductance, ability to balance, mobility, depression scores and associate memory as well as primary and working short term memory.

## **Summary and Discussion**

A sixty minute Yoga module practiced over a six month period brought about significant benefits in older persons with respect to their gait, balance, mobility, memory, mental state, self-rated quality of sleep, lung functions and reduced

psychophysiological arousal. The Ayurveda group showed improvements in lung functions and mobility but not in other measures. In contrast, the Wait-list Control group showed deterioration in lung functions, muscle mass and episodic memory.

With respect to changes in lung functions the Yoga group, there was an increase in FVC and minute ventilation. In an earlier study, an increase in the lung capacity following Yoga practice was attributed to an increased development of respiratory musculature.

Following Yoga there was a decrease in heart rate and in the power of the Low Frequency band of the Heart Rate Variability (HRV) spectrum while the High Frequency band of HRV increased. These changes suggested an increase in cardiac vagal and decrease in cardiac sympathetic discharge. The gait, ability to balance and mobility all improved following Yoga. While the exact basis is not known the improvement may be related to factors such as better visuo-motor co-ordination, postural re-adjustment and improved proprioception. It is possible that the semantic memory, primary and working short-term memory and episodic memory improved since reduced anxiety facilitates remembering, and the anxiety reducing effects of Yoga may have been the basis for these changes. Also, the practice of Yoga has already been shown to induce “a state of alertful rest” and reduced distractibility.

The changes in mood with a decrease in scores indicating depression following Yoga may be related to multiple factors. For example, physical activity is known to increase endorphin secretion, while guided relaxation was shown to reduce the secretion of hormones related to stress. Since Yoga incorporates both physical activity and relaxation, these factors may have contributed to the positive affect following Yoga. The Yoga group showed improvements in several aspects of their self-rated quality of sleep such as a decrease in time taken to fall asleep, an increase in the number of hours slept each night, and an increase in the feeling of being rested in the morning. Once again these benefits may be attributed to the increase in physical activity and relaxation associated with Yoga.

The group who received the Ayurveda intervention showed an increase in minute ventilation and Maximum Voluntary Ventilation at the end of six months. The underlying mechanisms cannot be speculated upon as the physiological effects of the individual components as well as of the

combination used in the Ayurveda preparation have not been studied. The Ayurveda group also showed an increase in their mobility. The rationale for this effect also, at this stage, cannot be understood for the reasons given above. In contrast to the Yoga and Ayurveda groups, the Wait-list Control group showed a decrease in mid-arm circumference which suggests a decrease in muscle mass and hand grip strength which indicates muscle endurance. This group showed an increase in skin conductance suggestive of increased sudomotor sympathetic activity and possibly of physiological activation. Finally this group showed a decrease in the scores of episodic memory. These findings suggest that in the absence of an intervention, the Wait-list Control group actually showed deterioration in different aspects of functioning.

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