

An evaluation of pulmonary parameters in two groups of subjects during Yoga practice

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ABSTRACT

The purpose of the present study was to investigate how far the short term practice of yoga (30 and 60 days) for an hour daily can improve the respiratory function. Male subjects (n=50, age 30-50 years) were randomly selected. Respiratory parameters (FVC, FEV₁, PEFR, FEF_{25-75%} and MVV) were determined by using a multifunctional computerized spirometer. Yoga (posture and *pranayamas*) practice for a month produced no significant improvement in pulmonary parameters. Nevertheless, when the subjects continued it for next 30 days, i.e., after 60 days significant changes were noted in FVC (p<0.001), FEV₁ (p<0.01) and PEFR (p<0.05). The result also revealed that amongst them 30 days yoga training resulted in a significant increase in FVC in elder group of people (age 41-50 yrs) where as in younger group (age 30-40 yrs) the changes were not so prominent. Result indicated that short term (30 days) yoga practice quickly improves respiratory functions in relatively elder people (age 41-50 yrs), when many of them in our tropical country suffer from primary level of respiratory problem. Regular practice of Yoga (posture and *pranayamas*) can prevent it by increasing the efficacy of respiratory muscles.

Keywords: Yoga, *pranayama*, breathing exercises, FVC, FEV₁, PEFR.

INTRODUCTION

Yoga is popular all over the world nowadays. It increases longevity,¹ and has therapeutic and rehabilitative effects.²⁻⁵ Yoga techniques include the practice of meditation, a variety of breathing exercises, and the practice of a number of physical exercises and postures, in which the focus is more on isometric exercise and stretching than on aerobic fitness.⁶

Pranayama is an important component of yoga training. *Pranayama* (controlled breathing exercise) improves the air way reactivity in the asthmatic individuals.⁷ It was noted that high frequency breathing exercise resulted in more than 10 fold increase in expired minute ventilation.⁸ Many reports supported the beneficial effect of long-term yoga training on pulmonary functions.⁹⁻¹¹

It has been reported that yoga practice an hour/day, for 12 weeks resulted significant increment in the forced vital capacity (FVC), forced expiratory volume in 1st second (FEV₁) and peak expiratory flow rate (PEFR).¹² Yoga was proved to be helpful for bronchial asthma.¹³ In a study with subjects between the ages of 40 to 60 years with no previous yoga experience, 80.0% showed improvement in breath holding time after the completion of an intensive yoga program.¹⁴

The purpose of the present investigation was to determine how far yoga practice over a short duration of 60 days for an hour daily can improve respiratory function.

SUBJECTS AND METHODS

The present study was conducted in Department of Physiology of Rohilkhand Medical College and Hospital with the collaboration of Yoga center of Bareilly, U.P., India.

New comer male subjects (age 30-50 years) were selected randomly from the yoga center of Bareilly, practicing yoga regularly. The subjects were priorly informed about the study and the consents were taken. They were divided in to two age groups: Gr. - A (30-40 yrs, n=25) and Gr.- B (41-50 yrs, n=25).

The pulmonary function tests or respiratory capacity of the subjects were determined using a multifunctional computerized spirometer (Sl. No. A-23-050.0883). Forced Vital Capacity (FVC), Forced Expired Volume-1st sec. (FEV₁), Peak Expiratory Flow Rate (PEFR), Forced Expiratory Flow (FEF_{25-75%}) and Maximum Voluntary Ventilation (MVV) were measured.

The subjects were asked to take a deep breath and blow it into the mouth piece of the spirometer. A nasal clip was

Study of Pathak *et al.* indicated subjects performing 'Pranayama' though a little older in age than matched control group, preserved their body in better frame, remained more proportionate with respiratory functions and exhibited stronger grip strength.¹⁹

Present study indicated that short term (30 days) Yoga practice (posture and *pranayamas*) is beneficial mainly in elder group of people (age 41-50 yrs) when many people in our tropical country suffer from primary level of respiratory problems. Regular practice of Yoga can prevent it by increasing the efficacy of respiratory muscles.

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