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Assessing the Impact of Yoga Practice on Pulmonary Function in Young Men

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ABSTRACT

In recent years, much research has been conducted to demonstrate the benefits of yoga training. The current study was conducted to determine the effects of yoga practice on certain lung functions. Sixty healthy young female volunteers (aged 17–28 years) were chosen. They had to do yoga for roughly an hour every day. MEDSPIROR measured FVC, FEV-l, and PEFR on day 1 following 6 and 12 weeks of yoga practice. After 12 weeks, there was a significant rise in FVC, FEV-L, and PEFR.

INTRODUCTION

Medical science seeks to achieve optimal physical and mental health for individuals by preventative, curative, and promotional measures. Medical professionals have traditionally prioritized curative care, with a recent shift towards preventive care. In contrast, yogic practice focuses on promotion, though some methods are also used for curative purposes. Several research have examined how yoga affects lung functions such as FVC, FEV-1, and PEFR. Udupa et al investigated the impact of certain breathing exercises (Pranayam) on normal people. Nayar et al investigated the impact of yoga activities on human physical efficiency. Miles Wales conducted another study that examined oxygen utilization during three yoga-breathing techniques. In a separate study, Makwana et al investigated the impact of short-term yoga practice on Ventilatory Function Tests. This study focused on young healthy boys to provide

additional evidence on yoga and pulmonary function. This study was meant to describe and determine the beneficial features of health and yoga.

METHODS

The study was conducted at Saveetha School of Physical Education, Saveetha University in Chennai, Tamil Nadu. Table I shows the physical parameters of 60 healthy young males who volunteered as subjects, including height, weight, and age, all of which play a role in determining lung volume.

All of the subjects practiced yoga for around one hour every day. The yogic routine included a prayer, asanas, pranayama, and meditation. Padmasana, Yoga Mudra, Matsyasana, Kukkudasan, Uthana Padhasana, Pavanmuktasana, Paschimotasana, Dhanurasana, Supta Vajrasana, Gomukhasana, Viparita Karani, Sarvangasana, Halasan, Karna Peedasana, Bhujangasana, Bakasana, Mandukasana, Parvathasana, Nauli, and Shavas. Optionally, the individuals could perform cleansing treatments (kriya).

All of the subjects had to practice pranayam for roughly 10 to 15 minutes. The pranayam routine includes deep breathing, inhalation-retention-exhalation at regular intervals, belly (diaphragmatic) breathing, and alternative nostril breathing.

The study also excluded people who practiced yoga less than five days per week. Pulmonary Function Tests (PFT) was recorded using MEDSPIROR, a computerized dry type spirometer manufactured in India (Chandigarh). The measures of PFT used in the study were FVC (forced vital capacity), FEVI (forced expiratory volume in the first second), and PEFR (peak expiratory flow rate). Recordings were taken on the first day of yoga practice, six(6) weeks later, and twelve weeks later. Day-l denotes the first day the individuals began yogic practice. For PFT, the subjects were first explained the entire process and then demonstrated it after gaining their agreement. The subjects took the test sitting down.

STATISTICAL ANALYSIS

Results of PFT (Pulmonary Function Tests) are reported as mean ± SD. The data were examined using the student 't' test. P-values < 0.05 were considered significant.

TABLE I: Physical characteristics of subjects

	Mean	Median	SD
Age Group (Years)	22.7	22.5	3.61

Height (cms)	155.3	156	4.917
Weight (kgs)	55.9	56	7.49

TABLE II: Comparison of pulmonary function tests

Time interval / Parameter	FVC (lit) Mean ± SD	FEV-1 (lit) Mean ± SD	PEFR (lit / sec) Mean ± SD
Day-1	2.02±0.29	1.99±0.29	5.10±1.12
Weeks-6	2.27±0.28*	2.24±0.28*	5.34± 1.10**
Weeks-12	2.54±0.27*	2.50±0.27*	5.59±1.09***

*P<O.OOl **P =N.S. ***P<0.05

DISCUSSION

The study found significant increases in FVC and FEV-1 at weeks 6 and 12 compared to day 1 (P<O.OOI). However, PEFR is not statistically significant at week 6, yet it is higher than on day 1. PEFR is considerably greater at weeks 12 compared to day l (P<0.05).

Makwana et al. found a significant rise in FVC after 10 weeks of yoga training. Others have reported similar observations. The improved development of respiratory musculature that occurs as a result of regular yogic activity contributes to the improvement in vital capacity. The practice improves respiratory function, leading to enhanced FVC. Similar ventilatory training has been demonstrated to improve lung volumes and capabilities in elderly individuals (aged 60 to 75 years). Makwana et al. discovered a rise in FEV-l following 10 weeks of yoga practice. The increase in FEV-l could be attributed to a large increase in vital capacity. Joshi et al. found a significant rise in FVC and PEFR after six weeks of pranayam practice.

Lung expansion at entire lung capacity is a significant physiological stimulus for the release of lung surfactants and prostaglandins into alveolar spaces, increasing lung compliance and decreasing bronchial smooth muscle tone, respectively. The other possible mechanism for improved PFT may be:

1. Increased respiratory muscle power as a result of muscular work hypertrophy during pranayam and other workouts.
2. Cleansing procedures cleans the infective nasal secretions.

3. Yogic breathing exercises train practitioners how to use their diaphragmatic and abdominal muscles more efficiently, which allows them to empty and fill the respiratory apparatus more efficiently and completely.
4. Yoga's relaxing influence on the mind can help reduce and release emotional stress, hence removing the brancho-constrictor effect.

Thus, yogic exercises appear to improve respiratory efficiency. A lot of research has been conducted to demonstrate the benefits of yoga on asthmatic patients. Yoga's influence on ventilatory responses, respiratory endurance, and muscle strength has been extensively studied in recent years. Bera et al. recently conducted research on stress recovery with yogic relaxation postures.

CONCLUSION

To summarize, yogic activities can help maintain body functioning, particularly pulmonary functions, in normal healthy persons. In our study, there was a significant improvement in FVC, FEV-l, and PEFR after 12 weeks of yoga practice in young healthy males.

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