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# Impact of yoga on asthmatic patients by measuring breath holding capacity

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**Abstract**
The aim of the study was to compare the breath-holding capacities of asthma patients before and after 8 week yoga session to observe the yogic effects and benefits on such people suffering from mild to severe asthma. The study involved 60 participants of random age group. Breath holding time in seconds was noted before and after yogic intervention for the same group. Analysis was done through paired t test which showed t stats value more than t critical value giving a basis to reject null hypothesis thus saying that there is significant difference pre and post yoga. Yoga should be practiced on a regular basis for increased efficiency of lungs and a better functioning of body.

**Keywords:** yoga, pranayama, asthma, breath holding capacity, asanas, lungs

## Introduction
When a person feels difficulty in breathing, pain in chest, wheezing or breaths heavily, he is supposed to have Asthma, prima facie. The airways inflame, shrink or swell which produces extra mucus, which further narrows the pathway of air, in the respiratory track and choked the respiratory organs. This affects the gas exchange system, inhalation of oxygen and exhalation of carbon di oxide and other toxic gases, of the body creating critical conditions inside the body, due to accumulation of these toxins.
This respiratory disease cannot be cured fully but its symptoms can be treated partially. So far surgery is concerned, no success is noted till now. That's why many patients try to find some alternate supports to control asthma. Yoga being the foremost ancient Indian therapies to rely on without any side effects and expenses.
Asthmatic people have abnormal breathing patterns. They often breathe from mouth, instead of nose, to bypass the first respiratory organ, from which the unfiltered air comes in and also the functions of the respiratory sensors in the brain become affected.

## Symptoms of Asthma
Asthma symptoms vary time to time and person to person. Major symptom are:
- Shortness of breath
- Wheezing while exhaling
- Trouble in sleeping
- Coughing or Wheezing attacks
- Heaviness, pain in chest
- Fever
- Irritability
- Dry mouth
- Thirst
- Dry skin
- Anxiety
- Constipation

## Types of Asthma
Asthma is of two types - Allergic and non-allergic.

## Non-Allergic Asthma are of
- Acute bronchial asthma
- Chronic bronchial asthma
- Cardiac asthma
- Renel asthma

- Cyanotic asthma
- Allergic asthma
- Dyspeptic asthma

**Allergic-asthma are of**

- In allergic asthma the airways are extra sensitive to certain allergans. And whenthey get into body, the immune system overreacts. The muscles around airways tighten.airways become inflamed and get thick mucus.
- More than 25 million people in the world have asthma and allergy asthma is the most common, affecting around 60% of people having asthma
- Symptoms are shortness of breath, wheezing.
- Asthma is triggered by exposure to the same substances that trigger allergy symptoms.
- An allergy is when the immune system mistakes a harmless substance such as pollen, smoke, as dangerous the body releases chemicals to attack the substance.

**Objective of Study**

To study the impact of 8 week yoga and pranayama session on 60 participants having Asthma.

**Hypothesis**

**H0:** There is no significant effect of pranayama and yogic intervention on experimental group
**H1:** Yoga and pranayama have significant effect in reducing asthma

**Method**

**Sample:** The sample of the study consisted of 60 participants of random age group all having mild to severe asthma problems. The breath holding capacities of the group of individuals were used to determine yogic effects. The pre and post experimental design with experimental group was used.

**Procedure**

60 individuals having mild to severe asthma were studied before undergoing yoga sessions for 8 weeks. Each subject was asked to hold his or her breath for as long as possible. After this they all were asked to attend 1 hour daily yoga session for 8 weeks straight.
The yogasans practiced were Ardhachakrasana, Tadasana, camel pose, cobra pose, bridge pose. Pranayamas practiced were deep breathing with holding, anulom-vilom, slow kapal bharti + bhastrika. The repitions of asanas were increased gradually.
After completion of 8 weeks again the participants were asked to hold there breath and the time period for each individual was recorded.
Analysis between pre and post yoga breath holding capacities was used to conclude the study.

**Result and Discussion**

Yoga Pranayama can increase the volume of the gases to be exchanged in the body, body awareness, slow respiratory rate, promotes calmness, relieve stress, all of which are beneficial for the people having asthma.

- Shavasana
- Sukhasana
- Backward bend
- Seated spiral twist
- Side bend
- Cobra pose

Asthma is an ongoing condition that needs regular monitoring and treatment.
As yoga asanas and breathing exercises help to improve posture and opening the chest muscles and expanding the chest area, which ensures better and easy breathing and reduced stress.
Yoga pranayama may result in many health benefits, physical and mental.

- It makes respiration better
- Improves cardio vascular activities
- Increase blood circulation
- Increases flexibility of body and internal organs and nerves
- Improves muscle strength and tone
- It makes mind body balance
- It manages stress
- It improves overall concentration
- Provides relief from anxiety

Trying them regularly helps in enjoying their benefits.

**Some factors which triggers asthma are**

- Lifestyle
- Food
- Polluted environment

1. Lifestyle - Unmanaged lifestyle is the main factor, which creates stress and affect the metabolism.
2. Packaged food, preserved and fermented food is another factor to talk about.

Polluted environment- Air borne allergens, such as pollen, dust, mold, pets, etc. and irritants such as certain medications, beta blockers (aspirin, non- steroidal anti- inflammatory
drugs like ibuprofen), smoke, emissions of any type, perfumery sticks, cigarette, garbage burning, brick manufacturing, etc are major factors).
Respiratory infections such as common cold, coughing, wheezing also triggerasthma. Heredity- Asthma may also be caused from heredity.
Overweight- Excess body weight might also trigger asthma as that person is prone to coughing or is of Vata prakriti, in which water and air are main factors. Imbalance of these mahabhutas can trigger asthma.
Psychological Factors as strong emotions and stress may also cause asthma.

**Table 1**

| Participant no. | Breath holding time (sec) before yoga | Breath holding time (sec) after yoga |
|---|---|---|
| 1 | 9 | 27 |
| 2 | 15 | 30 |
| 3 | 20 | 40 |
| 4 | 27 | 45 |
| 5 | 5 | 10 |
| 6 | 22 | 40 |
| 7 | 7 | 20 |
| 8 | 25 | 50 |
| 9 | 30 | 48 |
| 10 | 9 | 20 |
| 11 | 22 | 40 |
| 12 | 15 | 30 |
| 13 | 8 | 16 |
| 14 | 32 | 48 |
| 15 | 8 | 26 |
| 16 | 15 | 29 |
| 17 | 32 | 50 |
| 18 | 4 | 10 |
| 19 | 5 | 28 |
| 20 | 22 | 45 |
| 21 | 12 | 28 |
| 22 | 6 | 18 |
| 23 | 22 | 50 |
| 24 | 7 | 20 |
| 25 | 15 | 28 |
| 26 | 32 | 45 |
| 27 | 5 | 23 |
| 28 | 40 | 55 |
| 29 | 15 | 25 |
| 30 | 8 | 20 |
| 31 | 22 | 45 |
| 33 | 25 | 52 |
| 34 | 15 | 27 |
| 35 | 7 | 20 |
| 36 | 22 | 48 |
| 37 | 15 | 27 |
| 38 | 6 | 23 |
| 39 | 25 | 45 |
| 40 | 8 | 20 |
| 41 | 15 | 28 |
| 42 | 20 | 30 |
| 43 | 8 | 20 |

| | | |
|---|---|---|
| 44 | 25 | 40 |
| 45 | 25 | 55 |
| 46 | 15 | 38 |
| 47 | 35 | 48 |
| 48 | 15 | 27 |
| 49 | 7 | 25 |
| 50 | 9 | 27 |
| 51 | 33 | 47 |
| 52 | 15 | 48 |
| 53 | 5 | 9 |
| 54 | 18 | 28 |
| 55 | 35 | 50 |
| 56 | 5 | 22 |
| 57 | 15 | 28 |
| 58 | 12 | 25 |
| 59 | 6 | 20 |
| 60 | 12 | 22 |

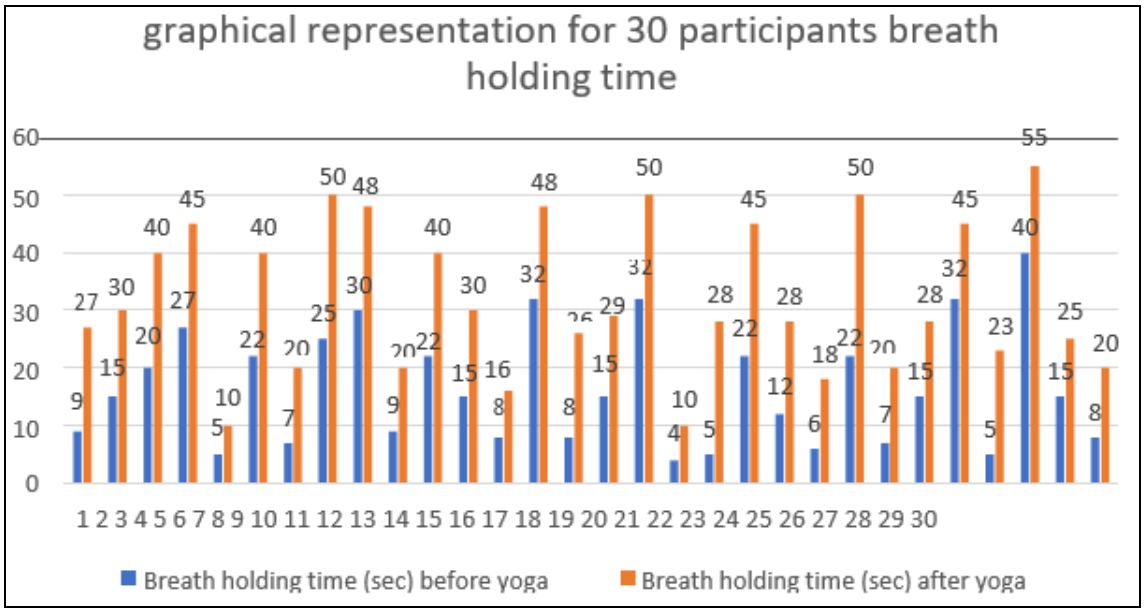


**Fig 1**

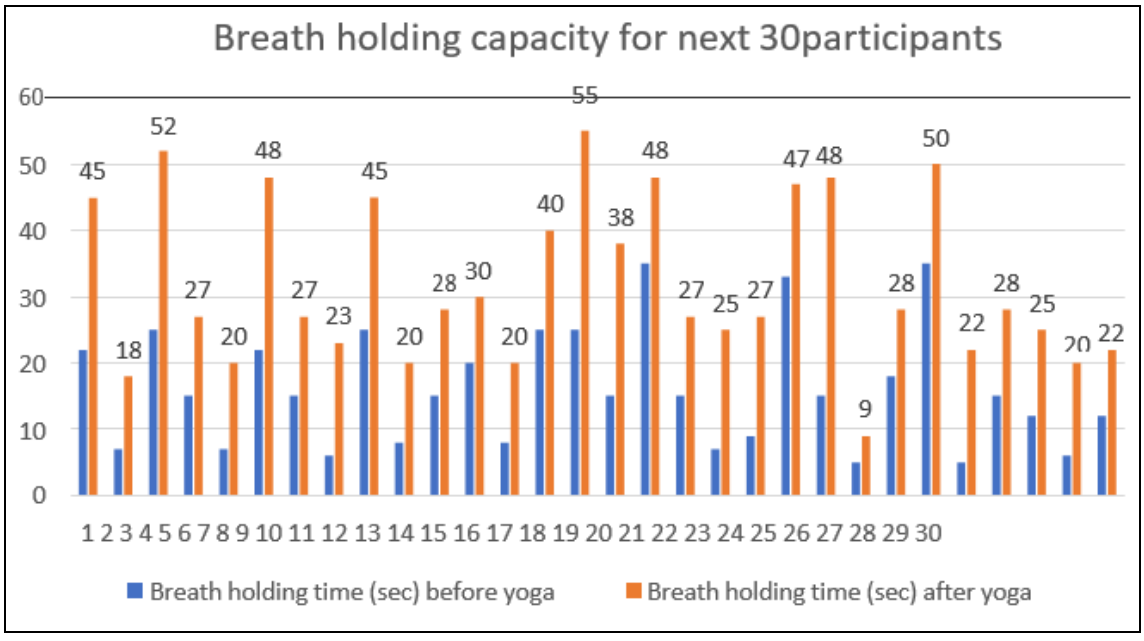


**Fig 2**

**Table 2**

| t-Test: Paired Two Sample for Means | | |
|---|---|---|
| | *Variable 1* | *Variable 2* |
| Mean | 16.26666667 | 32.1 |
| Variance | 89.92768362 | 160.6677966 |
| Observations | 60 | 60 |
| Pearson Correlation | 0.899109154 | |
| Hypothesized Mean Difference | 0 | |
| df | 59 | |
| t Stat | 20.89664264 | |
| P(T<=t) one-tail | 2.96597E-29 | |
| t Critical one-tail | 1.671093032 | |
| P(T<=t) two-tail | 5.93194E-29 | |
| t Critical two-tail | 2.000995378 | |

After 8 week of complete yoga practice and also noting initial and final breath holding capacities the result obtained shows increase in breath retention. Before yoga 7 people had breath holding time >31 sec. But after the 8 week session 23 people has breath retention >31 sec. and only 3 people had < 10 sec.
Hence, we can say that yoga is essential and vital to help increase lung efficiency and holding capacity.
Statistical analysis shows that T value obtained was 20.89 which is greater than 1.96 and p value is less than 0.05. Hence we can now reject our null hypothesis accepting alternative hypothesis stating that there is significant difference before and after yoga intervention and yoga significantly helps in increasing breath holding capacities of individuals.

## Conclusion

Asthmatic patients had less breath retention and consequently various other problems regarding respiratory system as compared to a healthy individual of same age group. Hence to treat this it is important to practice yoga regularly to help increase lung capacity and maintain a normal level of breath holding. Also people should be made aware about the unimaginable effects of yoga and to practice yoga under a trainer specialized in the same field. This way good results and benefits can be obtained.

## Suggestion

**Yoga:** Pranayama is the best solution to increase breath holding capacity. Proper guided breathing and asanas helps in speedy recovery of asthmatic patients making our body more flexible, which further helps the tissues to get proper oxygen.

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