

# Effectiveness of Jacobson Relaxation Technique and Bhastrika Pranayama on Sleep Quality in Elderly Subjects

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## Abstract

**Background:** Insomnia continues to be one of the most prevalent sleep disorders seen in geriatric clinic population. It is typically characterized by the subjective complaints of trouble falling asleep, or experiencing nonrestorative sleep. This study was developed to determine the effectiveness of Jacobson relaxation techniques and Bhastrika pranayama on sleep quality in elderly subjects.

**Purpose:** To compare the effectiveness of Jacobson relaxation techniques and Bhastrika pranayama on sleep quality in elderly subjects.

**Materials and Methods:** This study is an experimental study. A total of 86 people participated in the study based on inclusion and exclusion criteria, the participants were chosen from the old age home. The subjects who were willing to participate were divided into two separate groups as Group A (43 subjects) received Jacobson relaxation techniques and Group B (43 subjects) received Bhastrika pranayama. All the 86 subjects were assessed with insomnia severity index scale. This technique was given for 2 weeks, 5 days per week. Pre and post test values were calculated and tabulated. Study period: November 2022 to June 2023.

**Results:** According to statistical analysis Jacobson relaxation techniques are effective in improving the sleep quality in elderly subjects with p value of <0.0001.

**Conclusion:** This study finally concluded that Jacobson relaxation techniques have a higher impact "compared to Bhastrika Pranayama" in improving sleep quality in elderly subjects and also the quality of life in elderly subjects.

**Key Word:** Insomnia, Jacobson relaxation techniques, yoga technique, Insomnia severity index.

## Introduction

Insomnia is broadly described as a lack of satisfaction with either the quality or quantity of sleep. This is frequently accompanied by one or more of the following: having trouble falling asleep

and staying asleep, difficulty staying asleep as evidenced by numerous awakenings or difficulty falling asleep again after awakenings, and early morning awakening with difficulty falling back to sleep.<sup>1</sup> Insomnia may also be brought on by a sleep-wake switch that is less effective. During sleep, REM

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sleep cycles gradually take the place of non-rapid eye movement (non-REM) sleep stages. According to the AASM, there are five stages of sleep. Stage W (awakening) Stage N1 (calm awakeness) N2 stage light sleep Stage N3 (slow-wave or deep sleep) REM sleep stage R, also known as dreaming.<sup>2</sup> Problems falling asleep or maintaining sleep after waking up in the middle of the night or earlier than necessary or desired are characteristics of insomnia. Having trouble falling asleep, having trouble staying asleep, and waking up early are the three terms used to describe these problems.<sup>3</sup> Hyperarousal during sleep and awakeness is a result of the pathophysiology of insomnia disease. A high level of hyperarousal is a sign. An increase in cortisol and adrenocorticotropic hormone during the early stages of sleep, a decrease in parasympathetic tone in heart rate variability, and both sleep and wakefulness are associated with an increase in the body's metabolic rate.<sup>1</sup> Patients who claim to have insomnia frequently have a number of issues, such as difficulty falling asleep and sleep that is neither restorative or refreshing or to continue dozing off. Important diagnostic implications arise from a patient's insomnia's duration. Acute stress, acute sickness, jet lag, or self-medication are frequently causes of transient insomnia, which lasts only a few days. In patients who are terminally ill, sleep disruption is a common and stressful issue. Poor sleep has an impact on life satisfaction and can amplify symptoms like pain, depression, or anxiety. Women experienced insomnia more frequently than men. Multiple causes frequently contribute to insomnia in terminally ill patients, and both physical and psychological variables are thought to be significant etiological factors.<sup>6</sup> A significant risk exists for older persons with insomnia symptoms to also experience sadness, anxiety, and pain issues. Therefore, preventative interventions that focus on mild sleep complaints have the potential to delay the development of various morbidities in older adults as well as clinical insomnia in this population at risk. Sadly, resources that give cognitive behavioral treatment (such as highly skilled clinicians) may not be practical or cost-effective in places where normal care is provided, especially for older persons with moderate sleep complaints but not syndromal insomnia. Furthermore, rather than focusing on

disease treatment, older persons are increasingly looking for lifestyle changes that promote health.<sup>7</sup> Progressive muscular relaxation is effective because it allows your muscles to release tension. When you are completely relaxed, your body will naturally transition from an alert state to a resting state. In conjunction with steady, diaphragmatic breathing, you can relax each muscle group. Progressive Muscular Relaxation thus provides long-term effects that enhance patients' quality of life.<sup>12</sup> The breathing exercises are known as pranayama, a Sanskrit word for prana (life force) and ayama (control). It refers to a set of voluntarily performed breathing exercises that affect the respiratory frequency, inhalation frequency, retention frequency, exhalation frequency, and body locks frequency (bandh). Bhastrika pranayama is the only method for taking full breaths in and out so that our body obtains enough oxygen so that our body obtains enough oxygen. The regular breathing pattern and the movement of cerebral fluid is accelerated by exhalation, creating Brain compression and decompression. Rhythmic Diaphragmatic breathing activates the heart and lungs' muscles blood circulation is improved.<sup>11</sup>

### Aim

To find out the effectiveness of Jacobson relaxation technique and Bhastrika pranayama on sleep quality in elderly subjects.

### Material and Methods

It was an experimental study conducted on 86 subjects with sleep disturbance among older age group participants taken from Sai Sri Old Age Home. Concealed envelope method randomized controlled trial method was used in the study. Study period: November 2022 to June 2023.

#### Inclusion criteria:

- Patients with sleep problem are included
- Both the genders were included in the study.
- Score of greater than 10 in insomnia severity index scale.
- Over 30 minutes have passed since the start of sleep.
- Being unable to go back to sleep after an early wakeup.

**Exclusion criteria:**

- Participants in other interventional studies.
- Patients who refuse to sign consent forms or a lack of ability to adhere to study instructions.
- Patients with acute heart failure and restless leg syndrome.

**Procedure**

This study is an experimental study. The study included a total of 86 participants. The participants were chosen from an old age home based on inclusion and exclusion criteria. A formal informed consent form was signed after each participant had a detailed description of the procedure. Group A (43 subjects) and Group B (43 subjects) were created out of the willing participants. Total of 86 participants were assessed using insomnia severity index scale for both pre and post test. Jacobson relaxation technique was given to Group A, whereas Bhastrika pranayama was given to Group B. For two weeks and five sessions a week. Values from the pre- and post-tests were calculated and tabulated.

**Group A: Jacobson relaxation technique**

Jacobson relaxation technique: Subject position: Supine lying. Therapist position: To perform Jacobson relaxation technique the therapist stands at the side of the bed.

Technique: Ask the patient to Tighten the foot muscles and curl the toes starting from the feet. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract the lower leg muscles. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract the hip and buttock muscles. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract your chest and stomach muscles. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract the shoulders. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract

your facial muscles, such as by tightly closing your eyes. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Make a fist by contracting the hand's muscles. Hold for five seconds, then gradually let go for ten. Pay close attention and the sensation of relaxation as you release. Contract the lower leg muscles. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract the hip and buttock muscles. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract your chest and stomach muscles. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract the shoulders' muscles. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Contract your facial muscles, such as by tightly closing your eyes. Hold for five seconds, then gradually let go for ten. Pay close attention to the tension being released and the sensation of relaxation as you release. Make a fist by contracting the hand's muscles. Hold for five seconds, then gradually let go for ten. Pay close attention.

**Group B: Bhastrika pranayama:**

Subject Position: Half lying. Therapist Patient front facing the subject. Technique: Make sure both the nostrils are open. Ten times, aggressively inhale and exhale through both nostrils, count each breath. Inhale deeply through both nostrils for a long time. Hold your breath for a few seconds while closing both sides of your airways. Breathe out gradually through your joint nostrils. The most rounds possible should be performed. Progressively extend the retention period until it is at most 30 seconds after inhaling via the left, right, and both nostrils. Make no effort. Duration: 5 sessions for 2 week. Study period: November 2022 to June 2023.

**Data Analysis**

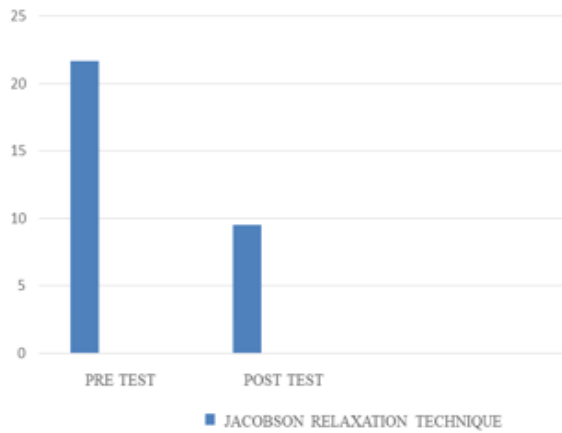
A statistical analysis is made with quantitative data revealed a statistically significant difference between the jacobson relaxation techniques group and the Bhastrika pranayama group,

**Results**

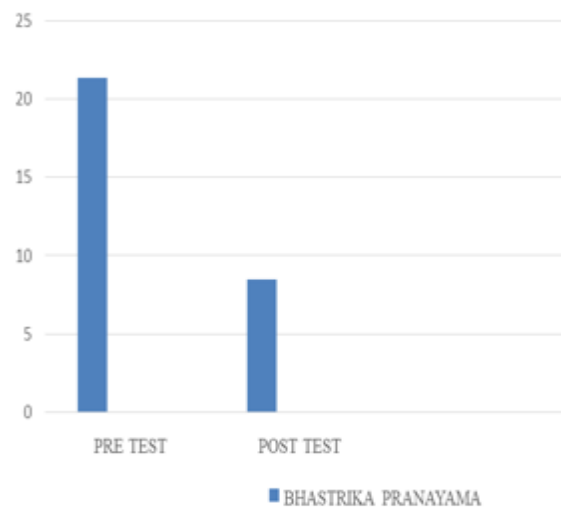
The statistical analysis of Group A by using insomnia severity index scale, pre-test and post-test Mean values of  $21.65 \pm 7.49$ ; and SD values of  $4.15 \pm 0.51$ ; SEM values of  $0.63 \pm 0.08$ ; T value of 22.6863 with P value less than 0.0001; and the statistical analysis of Group B by using the insomnia severity index scale pre-test and post-test Mean values of  $21.35 \pm 8.49$ ; and SD values of  $4.15 \pm 0.51$ ; SEM value of  $0.63 \pm 0.08$ ; and T value of 20.5521; with P value less than 0.0001 and the difference between the two groups a and b by using the insomnia severity index scale were evaluated by post- test Mean values are  $3.50 \pm 2.10$ ; and SD values of  $0.51 \pm 1.02$ ; and SEM values are  $0.11 \pm 0.23$ ; and T value of 5.4802 with P value less than 0.0001; These differences indicates that Group A which is treated with Jacobson relaxation techniques was highly benefited compared to Group B who was provided with Bhastrika pranayama

**Discussion**

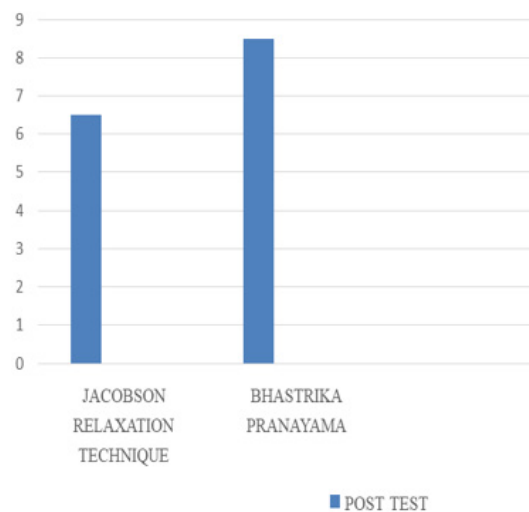
The goal of the present study was to compare the effectiveness of Jacobson relaxation technique and Bhastrika pranayama on sleep quality in elderly subjects. This comparison is demonstrated with a duration of 2 weeks. The outcome results were measured by insomnia severity index before and after treatment. Beneficial effects were significantly greater in Jacobson relaxation techniques than the Bhastrika pranayama. When the responses were compared between both groups, the result showed a significant difference in Jacobson relaxation technique than Bhastrika pranayama. Zahi Amon, PhD et, al (2008) concluded that, music relaxation appears to be more effective than progressive muscle relaxation in treating insomnia in older persons. The findings do, however, indicate that while determining the best course of action, emotional and personality characteristics must be taken into consideration. There is a need for additional research utilizing other techniques given the small sample size and the use of only two relaxation techniques.<sup>9</sup> Wafaa Taha Ibrahim Elgzar et, al (2018) concluded that post-c-section women who use the progressive muscle relaxation technique have lower post-c-section pain, better sleep quality, and lower physical activity levels than those who just received normal nursing care.<sup>10</sup> Evangeline



**Graph-1: Comparison between pre-test and post test value of jacobson relaxation techniques.**



**Graph-2: Comparison between pre-test and post-test value of Bhastrika Pranayama.**



**Graph-3: Comparison between Post test value of jacobson relaxation techniques and Bhastrika pranayama.**

Sally Jeyasigh et, al (2022) concluded that a method or procedure for calming the mind is pranayama. An overall healthy body and mind may be attained through pranayama. Through the process of Prana (vital force), one can walk a route to higher degrees of reconnection and live a healthy existence. When practicing pranayama, there are some guidelines that must be observed. In some circumstances, it may be utilized as a therapeutic technique.<sup>12</sup> Tejal C. Nalawade (2016) concluded that this study raises the possibility that using Jacobson's Progressive Muscle Relaxation could help older persons feel happier and less depressed while also lowering their symptoms of depression. When Progressive Muscle Relaxation is performed and incorporated into a 27 Person's lifestyle, it can assist in reducing bodily tension and reducing some of the symptoms of stress reaction.<sup>11</sup>

### Conclusion

According to the findings of this study, Jacobson relaxation techniques were found to be more beneficial than Bhastrika pranayama in improving the quality of sleep in elderly people. As a result, it is suggested that this procedure be explored further in clinical practice to improve sleep quality in elderly subjects.

**Ethical clearance:** Taken from institutional ethical committee. ISRB number -03/025/2022/ISRB/SR/SCPT.

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**Conflict of interest:** The authors state that there is no conflict of interest

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