

## "Comparison between Effectiveness of Jacobson Progressive Relaxation Technique and Laura Mitchell Relaxation Technique in Insomnia and Quality of Life in Aging Population"

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### Abstract

**Introduction-** Insomnia is one of the most common problems in aging population. Insomnia may affect quality of life in elderly. Most people depend on pharmacological treatment which may lead to side effects. Non- Pharmacological treatment can help people to reduce insomnia, and it does not have any side effects. Non pharmacological treatments include relaxation therapy. There are two types of relaxation techniques are used in this study Jacobson Progressive Relaxation technique and Laura Mitchell Relaxation technique.

**Aim-** To study the effectiveness of Jacobson progressive muscle relaxation technique and Laura Mitchell Technique in insomnia and quality of life in aging population.

**Methods-** This 4-week interventional study was conducted at Outpatient department of Bhausaheb Mulak Physiotherapy College Nagpur, India from October 2025 to March 2026. 28 participants were alternately divided into two group by alternately randomization. Group -A received Laura Mitchell Relaxation technique and Group-B receives Jacobson Progressive Muscle Relaxation Technique. Pre and Post assessment were taken by Insomnia Severity Index and OPQOL-Brief questionnaire.

**Results-** In insomnia severity index and QPQOL-Brief scores , Group B showed superior results with significant mean reduction from 13.16 to 11.33 and 44.67 to 46.91 respectively. Jacobson relaxation showed more robust clinical impact in improving sleep quality and quality of life.

**Conclusion-** Jacobson's Progressive Muscle Relaxation Technique is more effective than Laura Mitchell Relaxation Technique in improving insomnia and quality of life in aging population.

**Keywords:** Laura Mitchell , Jacobson relaxation, Insomnia, Aging population

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### 1. Introduction

Aging is defined as a ubiquitous universal biological process which is characterized by continuous irreversible changes in the body systems caused by accumulation of internal and external stressors (1). According to WHO, the population of above 60 people will be doubled around 2.1 billion. Age is an influential factor in sleep quality as age advances complains of sleeping disturbance increases. (2). The Circadian master clock is located in the Hypothalamus which is known to work in synchronization with light and food. Older adults experience daytime sleepiness. After retirement many older adults no longer have fixed work schedules, which may also increase the risk of insomnia (3). The decreased slow wave sleep is caused due to decrease in homeostatic sleep pressure (4). Insomnia is subjective sleep disorder, which is usually characterized by trouble initiating, maintaining, consolidating, or improving the quality of sleep even in

the face of sufficient sleep opportunities and circumstances (5).

Quality of life is person's standards, expectations, and concerns .Several studies have indicated that both insomnia and depression have severe impacts on the QOL of the elderly population (6). Treatment approaches for insomnia include, pharmacological and non pharmacological methods (7). Pharmacological interventions are known to interact with the neurotransmitter system to promote sleep, but it is known to have significant adverse effects. Whereas, non pharmacological interventions offer system benefits, superior benefits with long- term benefits without any adverse affects (8). Non pharmacological interventions include relaxation therapy, muscle relaxation techniques, breathing techniques, laughter therapies biofeedback and imaginary training.

In Jacobson's relaxation technique, muscles are alternately tightened and relaxed for a few seconds. The idea behind

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progressive muscle relaxation is that many unpleasant emotional experiences as well as physical and mental disorders are caused by psychological biological circumstances, such as neuromuscular pressure. Since an emotional state cannot exist when all bodily parts are completely relaxed, muscle relaxation leads to mental tranquility. In addition to counteracting the consequences of increased muscle tension on the body, relaxation stops the production of unpleasant thoughts and feelings like worry and stress (9).

Laura Mitchell relaxation technique is based on based on the reciprocal inhibitory principle of physiology and employs diaphragmatic breathing. Mitchell's method is a silent, solitary aural relaxing technique. It highlights the psychoneuroimmunological relationship between the mind and body, incorporates deep breathing, relaxation techniques, and guided imagery, and suggests total participation and autonomy (10). One set of forces acting on the joint causes the opposing set of muscles to relax. Reciprocal relaxation is a technique used in Laura Mitchell's relaxation technique. So, the need of study is to find the effectiveness of the two techniques Laura Mitchell relaxation techniques and Jacobson Progressive relaxation therapy and to compare which technique is superior to other towards Insomnia and Quality of life in aging Population.

## 2. Materials and Methods

### i.Study design and Setting

The study was an experimental study consisting of 28 participants. Non probability convenience method was used for sampling. Participants were recruited from Old age home and Bhausaheb Mulak Physiotherapy Department Out-patient department. The Study duration of study was 6 months with 4 weeks of treatment duration. Inform Consent was obtained.

### ii.Participant Selection

The Participants were selection based on inclusion-exclusion criteria. Both male and female between age group of 60 to 85 years having > 24 MMSE score, and insomnia severity

index score 8-14 will be included whereas, participants with neurological and psychiatric disorder or undergoing some other pharmacological treatment of insomnia were excluded from study.

### iii.Interventions

The treatment for both groups were commenced for total 4 weeks with 3 sessions per week. Each session lasted for 30 minutes. Group A was given Laura Mitchell Physiological relaxation technique (11) whereas, Group B was given Jacobson Progressive Relaxation technique (12). Demonstration of each technique was done prior to intervention.

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### Group- A

#### Laura Mitchell Physiological Relaxation Technique

##### General instructions:

Participants were instructed to come in relaxed and comfortable supine position with pillows placed beneath with eyes and mouth kept closed. The voice of instructor was kept smooth to provide relaxation to patient. It consisted of diaphragmatic breathing and Isotonic contractions.

##### Procedure:

The position of tension of whole body was started with face followed by upper limb, lower limb followed by whole body. Raised shoulders followed by bent-up elbows with head and trunk flexed. The patient changed the position of every joint in turn. Instructions given were, " Stretch the fingers out long", "Stop!", feel the "straightened out fingers and fingertips touching the support".

Reciprocal relaxation in the contracting muscles followed by relaxation in opposite muscle groups were commenced. Patient was instructed to perform anytime, to stop mounting tension in muscles.

To avoid fainting, patient was instructed to come in active state slowly and was asked to open eyes, being aware of the room, followed by gentle stretches. This technique was performed for thirty minutes per session.

After each movement, participants stopped, sensed reduced muscle tension, and focused on feelings of comfort, ease, and body awareness throughout the session (Image 2)

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| <p><b>Group B</b></p> <p><b>Jacobson Progressive Relaxation Technique</b></p> <p>General instructions:<br/>Breathe deeply into your abdomen three times, letting go softly after each. Imagine that the tension in your body starts to release as you breath. It consisted of diaphragmatic breathing and Isometric contractions</p> <p>Procedure:<br/>The technique involves methodically tightening and relaxing various muscle groups; for the face and head, the muscles of the forehead, eyes, jaw, neck, and back are tensed and then relaxed to create a feeling of calmness; for the upper limbs, the muscles of the fists, biceps, triceps, shoulders, chest, and abdomen are tightened for a few seconds and then released to reduce tension; and for the lower limbs, the muscles of the buttocks, thighs, and calves.</p> <p>Deep breathing is encouraged during the exercise. The method entails methodically contracting and relaxing various muscle groups. To induce a sense of serenity, the muscles of the forehead, eyes, jaw, neck, and back are contracted and subsequently relaxed.</p> <p>To relieve tension, the muscles of the upper limbs—the fists, biceps, triceps, shoulders, chest, and abdomen—are contracted for a brief period of time before being released.</p> <p>The muscles of the thighs, calves, and buttocks in the lower limbs contract and relax sequentially. Throughout the activity, deep breathing is advised.</p> <p>The participants experience a state of relaxation spreading from head to toes. Thus providing calmness (Image 1)</p> |
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Image 1- 68 year elderly female performing Jacobson Progressive Relaxation technique in Old age home



Image 2- 75 year elderly male performing Laura Mitchell Physiological relaxation technique in Old age home

## vii.Outcome Measures

### 1.Insomnia Severity Index (ISI)

It is a tool designed to asses severity of sleeplessness at night and day. It is available in several languages and is used widely globally. Studies have reported good psychometric properties for both English and French language. It is used clinically in several researches. It is a subjective scale with a total of 7 questionnaires with are self reported by patients. ISI is a rapid, cost effective and, easy to administrator screening tool. It is a subjective-patient compliant measure. ISI is a Likert scale, holding 05 points in total. This tool deals with assessing the nature, severity and impact of insomnia (13).

|                       |            |
|-----------------------|------------|
| Absense of insomnia   | 0-7 score  |
| Subthreshold insomnia | 8-14 score |

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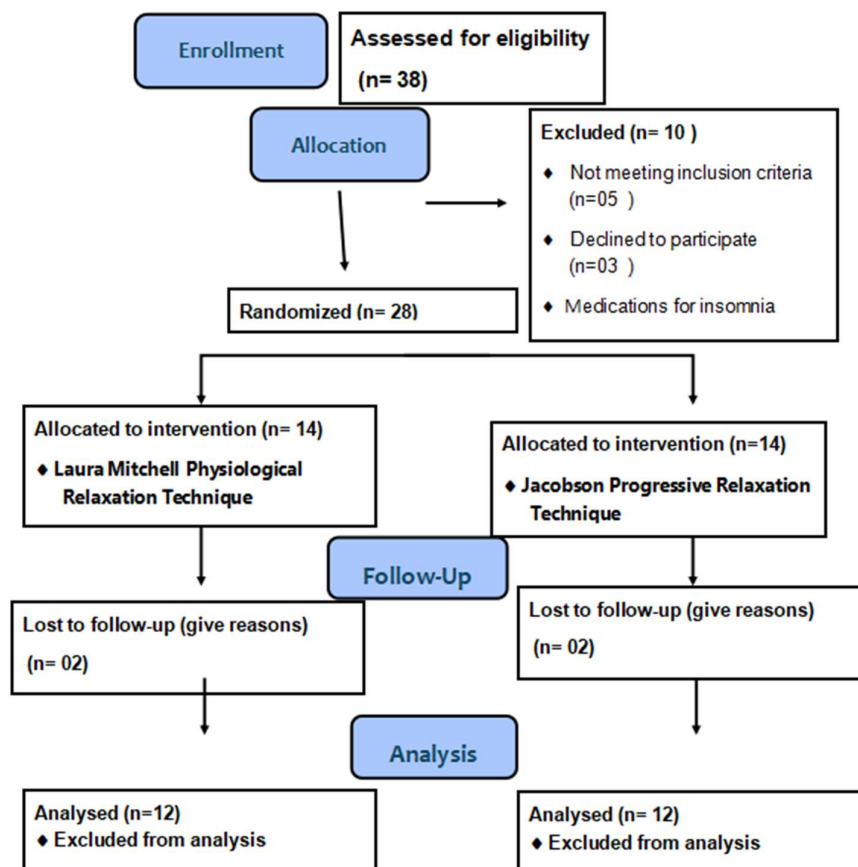
|                   |             |
|-------------------|-------------|
| Moderate insomnia | 15-21 score |
| Severe insomnia   | 22-28 score |

## 2. OPQOL-brief (Quality of Life questionnaire)

It is a valid assesment tool developed for measuring quality in adults. It consists of 35 open-ended questions, with 8 domains. It is a unique, original measure scale, developed by older people's own thoughts. It consists of 5- point Likert response scale. This scale is built upon paradigm of older adults. Moreover, It is a invaluable advancement in psychometric assessment. It effectively operationalizes core quality of life domain, psychosocial well -being and life constraints. It has internal consistency of 0.88. It mitigates respondent fatigue (14).

## viii.Statistical analysis

Independent t-test.  $P < 0.05$  was considered as statistical significance. Statistical software STATA version 14.0 was used for data analysis. The CONSORT Chart is given in (Flowchart 1).



Flowchart : Describing CONSORT Chart of study

## 3. Results

The results of the study concluded that, the baseline characters like, age, weight, BMI were similar for both groups. The p value was set at ( $p > 0.05$ ).

Insomnia Severity Index, Intra Group comparison results showed, For Group A (Laura-Mitchell technique), there was statistically reduction in ISI scores. The mean score decreased from  $12.0 \pm 5.09$  to  $11.41 \pm 4.54$ . The results were significant. Whereas, group-B (Jacobson progressive relaxation technique), there was statistically reduction in ISI scores. The mean score showed profound improvements, The mean score dropped from,  $13.16 \pm 3.01$  to  $11.33 \pm 2.96$ , indicating highly significant results (Table 1). Inter- Group B results showed, substantially higher mean change of 1.83, confirming highly significant difference between two interventions (Table 2). The conclusion of the study stated, both the interventions effectively reduced the severity of insomnia. But, Jacobson progressive relaxation (Group B) yielded superior results and clinical outcomes compared to Laura Mitchell Technique.

QPQOL-BRIEF, Intra Group comparison results showed, For Group A (Laura-Mitchell technique), there was mean quality of life score increment from  $45.16 \pm 5.07$  to  $45.75 \pm 5.26$  (Table 3). Whereas, group-B (Jacobson progressive relaxation technique), showed substantial increase  $44.67 \pm 6.41$  to  $46.91 \pm 5.58$  which is highly significant. The inter

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group analysis revealed, Both groups demonstrated significant results but Jacobson progressive muscle relaxation yielded better results (Table 4). The conclusion of the study stated, both the interventions effectively reduced the severity of insomnia and improved quality of life. However, Jacobson progressive relaxation (Group B) yielded superior results and better clinical outcomes compared to Laura Mitchell Technique (Graph 1) (Graph 2).

**Table 1: Pre and Post Insomnia severity index in Group-A and B**

| Group   | ISI      |      |           |      | t-value | p-value     |
|---------|----------|------|-----------|------|---------|-------------|
|         | Pre test |      | Post test |      |         |             |
|         | Mean     | SD   | Mean      | SD   |         |             |
| Group-A | 12.0     | 5.09 | 11.41     | 4.54 | 3.0225  | 0.0116, S   |
| Group-B | 13.16    | 3.01 | 11.33     | 2.96 | 8.8484  | <0.000 1,HS |

**Table 2: Comparison of change in ISI after intervention between Group-A and B**

| Group | Group-A |      | Group-B |      | Z-value | p-value    |
|-------|---------|------|---------|------|---------|------------|
|       | Mean    | SD   | Mean    | SD   |         |            |
| ISI   | 0.58    | 0.66 | 1.83    | 0.71 | 4.4145  | 0.0002, HS |

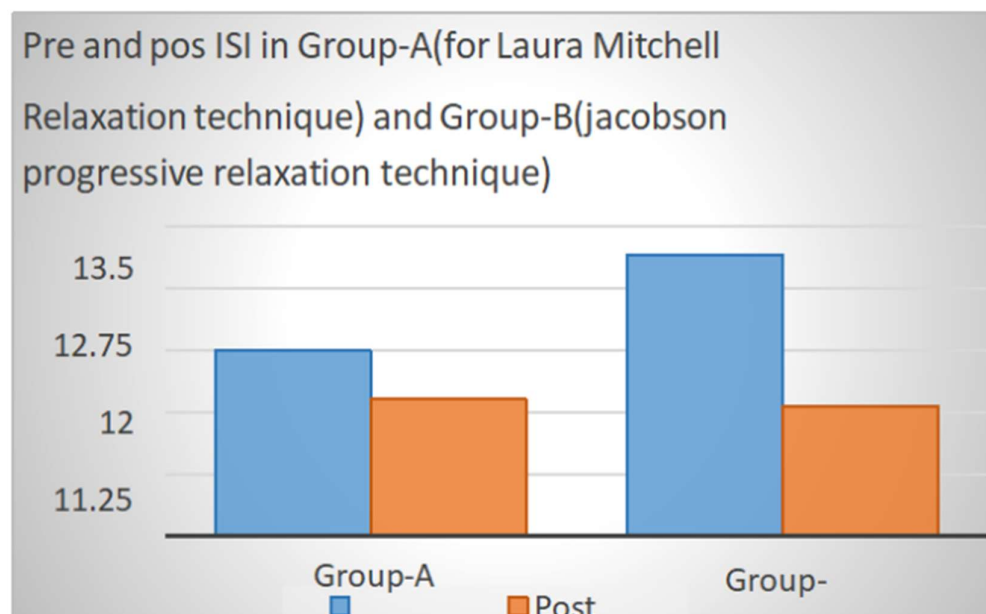
**Table 3: . Pre and Post OPQOL Brief in Group-A and B**

| Group   | OPQL Brief |      |           |      | t-value | p-value     |
|---------|------------|------|-----------|------|---------|-------------|
|         | Pretest    |      | Post test |      |         |             |
|         | Mean       | SD   | Mean      | SD   |         |             |
| Group-A | 45.16      | 5.07 | 45.75     | 5.26 | 3.2228  | 0.0458, S   |
| Group-B | 44.67      | 6.41 | 46.91     | 5.58 | 9.0000  | <0.000 1,HS |

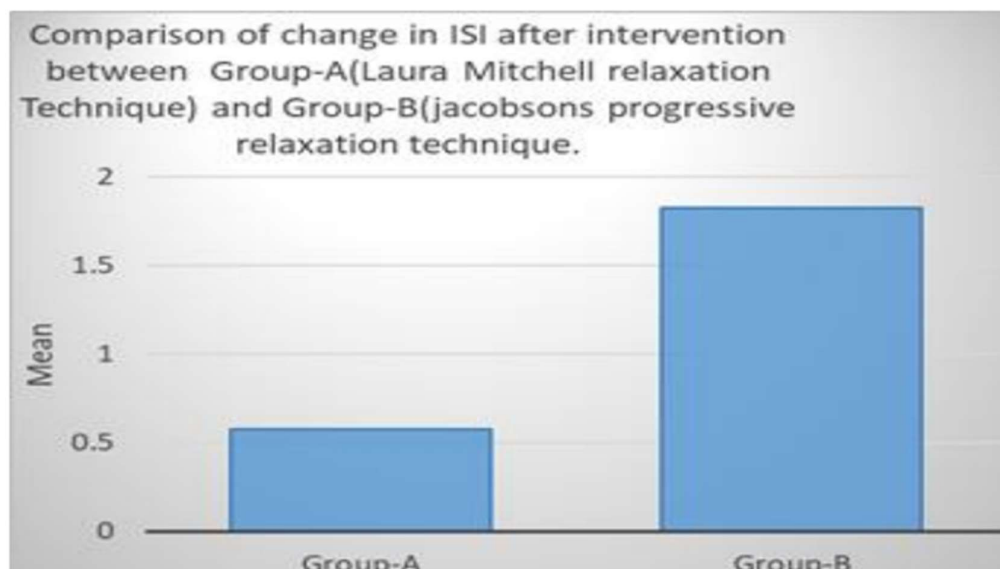
**Table 4: Comparison of change in OPQOL Brief after intervention between Group-A and B**

|            | Group-A |      | Group-B |      | Z-value | p-value   |
|------------|---------|------|---------|------|---------|-----------|
|            | Mean    | SD   | Mean    | SD   |         |           |
| OPQL Brief | 1.16    | 1.83 | 2.25    | 0.86 | 3.1198  | 0.0050,HS |

**GRAPHS**



**Graph 1: Showing (pre and post) intervention result**



**Graph 2: Comparison (pre and post) intervention result**

#### 4. Discussion

The present study was conducted with the aim to compare the effect of Jacobson progressive relaxation technique and Laura Mitchell physiological relaxation technique in aging population in insomnia and quality of life in elderly. Outcome measures like OPQOL-BRIEF and Insomnia Severity index were used. The targeted population for the study were Aging population aged 60-85 years. Insomnia was assessed by using Insomnia severity index and quality of life by OPQOL-BRIEF questionnaire. The study protocol was held for 4 weeks, 3 sessions per week. Older adults experience physical, mental and socioeconomic challenges, resulting in stress, depression, anxiety (15). According to studies, females above 70 years and above, experience higher sleep disturbances, particularly residing in institutional settings (16). Stress and anxiety in elderly population causes activation of sympathetic nervous systems which cause physiological complications. The results of our study align with the various researches conducted previously. Jacobson Relaxation Technique is an effective technique, it aligns with the study conducted by Mentz et al, (2003) that, proposed about the physiological aspect of the technique. It helps to activate parasympathetic nuclei in lower half of pons and medulla. It helps to regulate vitals and stress markers like cortisol of the body. Relaxation is induced by decrease work of motor neuron, autonomic nervous system, cortical excitation, and reduced afferent efferent activity thus resulting in better relaxation and hence improve sleep (17). It is also supported by the study of Corinne Urech et al (2010) that progressive muscle relaxation techniques help to decreased cortisol and norepinephrine levels by causing suppression of Hypothalamus Pituitary Axis and Sympathetic Nervous System. Rao et al, (2025) reported that Jacobson progressive relaxation technique is effective for COPD patients as it reduces bouts of shortness of breath in just 2 sessions has effect in reducing shortness of breath in two-sessions (18). Further, Dyah et al, (2016)

stated about the positive impact of the technique by improving various parameters of sleep (latency, efficiency, duration and disturbances) (19). Gopika et al, (2024) stated about the effectiveness of Jacobson relaxation technique than Bhastrika pranayama, which aligns with the result of our study (20). However, Bai et al, (2025) published report about the non invasive intervention. It concluded about the superior results deep breathing as compared to Jacobson relaxation in post menopause women (21).

Hoffman et al, (1992) Mitchell relaxation technique produces relaxation response which is caused due to release of hormones showcasing its effects on cardiorespiratory systems. Mujahid et al, (2026) (22) published a study regarding greater clinical effects of Laura Mitchell Technique in stage 3 & 4 COPD patients. The response is caused by release of hormones which have widespread effects in cardiorespiratory system resulting in relaxation. In the current study Jacobson relaxation technique comprises of diaphragmatic breathing and series of isometric contractions whereas Laura Mitchell relaxation technique consist of diaphragmatic breathing and series of isotonic contractions. However, Laura Mitchell group performance was less when compared to first group, the reason being since it involved isotonic contraction the elderly people who had pain and difficulty in moving limb did not significantly improved as compared to Jacobson relaxation. Bell et al, (23) published a study stating diaphragmatic breathing to be more effective than Laura Mitchell. According to Sasun et al, Advocacy and improved access to care are both required for elderly (24).

Thus, the current study found effectiveness of both Jacobson's progressive relaxation, However, Jacobson progressive relaxation technique group improved more than Laura Mitchell relaxation technique in Insomnia severity index and OPQOL-brief. Few limitations of the study were, nonprobability convenience sampling method and small sample size.

## 5. Conclusion

In this study it is concluded that both Laura Mitchell Relaxation Technique (Group-A) and Jacobson's Progressive Muscle Relaxation Technique (Group-B) were effective in improving insomnia and quality of life in the aging population. However, Jacobson's Progressive muscle relaxation technique showed significantly more improvement compared to Laura Mitchell Relaxation Technique. The reduction in Insomnia Severity Index and OPQOL-Brief questionnaire scores was highly significant in Group-B. Therefore, Jacobson's Progressive Muscle Relaxation Technique is more effective in improving insomnia and quality of life in aging population.

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