EFFECT OF STRETCHING AND AEROBICS WITH JACOBSON RELAXATION TECHNIQUE ON ANXIETY AND LOW BACK PAIN IN PERI MENOPAUSAL WOMEN - A RANDOMIZED CONTROLLED TRIAL.

Dr. Asmita Kadel¹, Shubhra Medhe², Dr. Kalyani Nagulkar³

¹Assistant Professor, ²Student, ³Professor
Dr. Ulhas Patil College of Physiotherapy, Jalgaon, India.

Abstract: BACKGROUND: Menopause, or menstrual-pause, refers to the inevitable point in a woman’s life when ovulation ceases and the production of estrogen and progesterone falls and stops. The typical symptoms of menopause are the hot flushes which most of the women experience during the transition period. Other symptoms include depressed mood and increased anxiety. About 66.7% of women have moderate symptoms, 20% complains of severe symptoms and 13.3% reports mild symptoms. Most women reach menopause at an average age of 51–52 years. The reduction of the sex hormones (like estrogen and progesterone) levels can be a risk factor for the degeneration of the inter-vertebral discs of the lumbar spine. Thus, the declines in the organic form and function inherent to the aging process tend to cause low back pain. Most of the women report low back pain during the menopausal transition and early menopause which is due to fluctuations in estrogen levels. Fluctuations in estrogen level is associated with pain, leading to anxiety. Studies have been conducted in relation with management of anxiety in patients with menopause females but this study mentions the relation between pain and anxiety and how these both are related with a view to form a concrete predetermined physiotherapeutic strategies for low back pain and anxiety management.

AIM & OBJECTIVE: To study the Effect of Stretching and Aerobics with Jacobson Relaxation Technique on Anxiety and Low Back Pain In Peri-menopausal Women.

Methodology: We selected 38 peri-menopausal women as subjects for the study, who fulfilled the inclusion Criteria. Out of the 38 participants 19 subjects in Group A & remaining 19 subjects in Group B in age group between 41-50 years. Who were having anxiety and low back pain. Group A subjects who selected were treated by low back stretching with Jacobson’s Relaxation Technique and Group B subjects who selected were treated by Aerobics with Jacobson’s Relaxation Technique for a period of 5 days in all 3 weeks. The pretest and post-test measurement was taken by using Numerical pain rating scale (NPRS) for Pain Intensity and Hamilton Anxiety Rating Scale (HAM-A) for Anxiety.

RESULT: The pretest and post-test mean values of peri-menopausal women having anxiety and low back pain was analyzed using the paired ‘t’ tests and unpaired ‘t’ tests. Statistically, there is was no significant difference in HAM- A average score of Group A and Group B having p value 0.154. The test statistics value of the unpaired t test was 3.75 with p value 0.001, hence reject the null hypothesis. That means there was significant difference in the NPRS average score of Group A and group B.

CONCLUSION: The present study concluded that Stretching with Jacobson relaxation technique has a considerable improvement in anxiety and low back pain in Peri-menopausal women as compared to Aerobics with Jacobson relaxation technique.

Keywords: Peri-menopausal women, HAM-A, NPRS, low back pain, anxiety.

INTRODUCTION:

Menopause, or menstrual-pause, refers to the inevitable point in a woman’s life when ovulation ceases and the production of estrogen and progesterone falls and stops. Most women reach menopause at an average age of 51–52 years. Menopause occurs in three stages: peri-menopause, menopause, and the post-menopause. Peri-menopause is the stage before the First Menopausal Phase (FMP), which is marked by hormonal fluctuation and irregularity in the menstrual cycle. The typical symptoms of menopause are the hot flushes which most of the women experience during the transition period. Other symptoms include depressed mood and increased anxiety. About 66.7% of women have...
moderate symptoms, 20% complains of severe symptoms and 13.3% reports mild symptoms\textsuperscript{[11]}. The reduction of the sex hormones (like estrogen and progesterone) levels can be a risk factor for the degeneration of the inter-vertebral discs of the lumbar spine\textsuperscript{[6]}. Thus, the declines in the organic form and function inherent to the aging process tend to cause low back pain\textsuperscript{[9]}. Cortisol is responsible for many catabolic processes in the organism and is released as a pulsatile stress hormone in the bloodstream. In stressful and painful situations, cortisol causes a catabolic state in the metabolism\textsuperscript{[9]}. Anxiety is a negative emotion that acts as a mediator between stress stimuli and emotional (physiological) reaction patterns. The myofascial system is particularly sensitive to stress, and its long-term impact can lead to permanent tension of the skeletal muscles\textsuperscript{[8]}. Stretching is considered very low-intensity exercise, making stretching well suited to a broad, varied population, including inactive people. Acute stretching is known to have beneficial effects on mood states\textsuperscript{[10]}

**MATERIALS:**
- Informed consent,
- patient evaluation sheet,
- pen,
- Menopause rating scale
- HAMS questionnaire
- NPRS
- couch.

**METHODOLOGY:**
- Study type: Experimental study
- Study design: Randomized clinical trial
- Study duration: 3 weeks
- Type of sampling: Simple random sampling
- Sample size: 38
- Study population: Peri-menopausal women
- Study setting: Dr. Ulhas Patil College Of Physiotherapy, Jalgaon.

**Inclusion criteria-**
- Subjects willing to participate in study.
- Females in between 40-50 years of age.
- No limitations on exercising (cardiovascular or orthopedic condition)
- No psychotropic medications or sleeping pills.

**Exclusion criteria-**
- Prediagnosed psychological disorders
- Subjects having NPRS score above 7.
- Subjects undergone lumbar surgery in the past 5 years.
- Exhibiting musculoskeletal problems.

**OUTCOME MEASURES:**
1. **Numerical pain rating scale (NPRS) for Pain Intensity:** (ICC=0.96) Pain score of the subjects will be recorded by using the Numerical pain rating scale (NPRS). NPRS is a 10 cm straight line drawn on a paper marked with numbers 0 to 10 where 0 symbolized no pain and 10 symbolized the worst tolerable pain and subjects were asked to mark a point on this line as per the severity of his/her pain which indicates present pain level.
2. **Hamilton Anxiety Rating Scale (HAM-A) for Anxiety:** (ICC=0.709) Severity of anxiety symptoms will be measured by using Hamilton Anxiety Rating Scale (HAM-A). The scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety and somatic anxiety. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0-56, where <17 indicates mild severity, 18-24 mild to moderate severity and 25-30 moderate to severe.
NPRS - NUMERICAL PAIN RATING SCALE

On a scale from 0 to 10, where 0 is no pain and 10 is the worst pain you’ve experienced, at this moment, what number represents your overall pain level?

<table>
<thead>
<tr>
<th>No pain</th>
<th>Moderate pain</th>
<th>Worst possible pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

**How to use:**
- Ask the patient, “On a scale from 0 to 10 where 0 is no pain and 10 is the worst pain you’ve experienced, at this moment, what number represents your overall pain level?”.
- Patient to select one whole value.

**Scoring/Documentation:**
- Numeric Pain Rating Scale has a range from 0 to 10.
- Document score in medical record (this includes 0 for no pain).

**Interpretation:**
- 0 to 3 — Mild pain  
  4 to 6 — Moderate pain  
  7 to 10 — Severe pain
- Compare the patient’s acceptable level of pain to the patient’s current self-report of pain to determine level of intervention. This may include non-pharmacologic and pharmacologic interventions.
- Re-assess patient per frequency of local pain policy.
PROCEDURE

A total number of 38 subjects were selected who fulfilled the inclusion criteria. The study was pre-test and post-test for Group A and Group B comparative study in nature. The treatments were conducted for 5 days in 3 weeks the subjects were selected by using purposive sampling method pretest taken using Menopause rating scale. Subjects were screened on the basis of inclusion – exclusion criteria. A brief demographic data was obtained and a written consent was taken from all the participants, and the nature and purpose of the study was explained to them. First, we assessed the menopausal symptoms by using the Menopause Rating Scale. Then we did a pre-test measurement to access the level of anxiety and Pain in selected Peri-menopausal subjects. The treatment protocol was demonstrated to the subjects during the first session. After 3 weeks of intervention, post test assessment was done and Data was analyzed statistically using MS Excel and results were generated.

Group A - Stretching and Jacobson relaxation technique.

19 subjects in group A were treated with stretching and Jacobson relaxation technique.

Low back stretching: 5 days per week for 3 weeks.

1. Cobra pose- Lie flat on your stomach with palms on the floor below and slightly outside shoulders.
   - Inhale while Tilting the head backwards and straightening the arms.
   - Breathe and hold the pose for 15-30 secs and repeat 3 times per session.
   - Exhale and bend arms, lower the abdomen, then chest, shoulders and face.
2. **Cat-Cow pose-**
   - Begin with quadripud position with neutral spin.
   - Inhale and move into cow pose by lifting the pelvis and pressing the chest forward, allowing the belly to sink in.
   - While exhaling, come into cat pose by rounding the spine outward, tuck in the tailbone and anteriorly tilt the pelvis and head towards the floor.
   - 5-10 reps per session.

3. **Child’s pose-**
   - The subject is asked to kneel on the floor and sit back on heels with arms at sides.
   - Slowly bend forwards so that the abdomen touches the thighs’
   - Extend the hands out with palms resting on the floor.
   - Close your eyes and allow the entire body to relax.
   - Hold this position for 3-5 minutes.
   - Slowly return to the sitting position.

**Group B - Aerobics and Jacobson relaxation technique.**

19 subjects in group B were treated with Aerobics and Jacobson relaxation technique.

1. **Jogging in place** - 5 minutes.
2. **Brisk Walking** - 15 minutes.
3. **Stair climbing** - 5 minutes

**Jacobson relaxation technique:**
- It was practiced in a comfortable position sitting or lying down in a place that will be undisturbed for 10-15 minutes. The subjects were asked to focus attention and contract the mucles of face, hands, shoulders, back, stomach, hips and buttocks, thighs, feet and toes accordingly. The contraction was held for 5 secs followed by relaxation. The process was repeated if the subject felt any tightness in a particular muscle group.

  - Forehead - Wrinkle your forehead; try to make your eyebrows touch your hairline for five seconds. Relax.
  - Eyes and nose - Close your eyes as tightly as you can for five seconds. Relax.
  - Lips, cheeks and jaw - Draw the centres of your mouth back and grimace for five seconds. Relax. Feel the warmth and calmness in your face.
  - Hands - Extend your arms in front of you. Clench your fists tightly for five seconds. Relax. Feel the warmth and calmness in your hands.
  - Forearms - Extend your arms out against an invisible wall and push forward with your hands for five seconds. Relax.
  - Upper arms - Bend your elbows. Tense your biceps for five seconds. Relax. Feel the tension leave your arms.
  - Shoulders - Shrug your shoulders up to your ears for five seconds. Relax.
  - Back - Arch your back off the floor for five seconds. Relax. Feel the anxiety and tension disappearing.
  - Stomach - Tighten your stomach muscles for five seconds. Relax.
  - Hips and buttocks - Tighten your hip and buttock muscles for five seconds. Relax.
  - Thighs - Tighten your thigh muscles by pressing your legs together as tightly as you can for five seconds. Relax.
  - Feet - Bend your ankles toward your body as far as you can for five seconds. Relax.
  - Toes - Curl your toes as tightly as you can for five seconds. Relax.

**DATA ANALYSIS**

The pre and post assessed data of 38 subjects was entered in MS Excel before it was statistically analyzed. Statistical analysis was performed using Minitab 17 software using paired and unpaired t test. Mean and standard deviation were calculated for all the needed variables.
Table 1- Age wise distribution of subjects

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Variable</th>
<th>Groups</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
<td>Frequency</td>
</tr>
<tr>
<td>1</td>
<td>Age (in years)</td>
<td>41-45</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>46-50</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

47.37% 57.89% 52.63% 42.11%

Graph 1- Age wise distribution of subjects

Table 2- Group A HAM-A score

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>Score</th>
<th>PRE Test</th>
<th>POST Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>HAM-A</td>
<td>Mild</td>
<td>&lt; 17</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Mild to Moderate</td>
<td>18-24</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Moderate to Severe</td>
<td>25-30</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Graph 2 - Group A HAM-A score

![Graph 2 - Group A HAM-A score](image)

Table 3 - Group B HAM-A Score

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>Score</th>
<th>PRE Test</th>
<th>POST Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>HAM-A</td>
<td>Mild</td>
<td>&lt; 17</td>
<td>16</td>
<td>84.21</td>
</tr>
<tr>
<td></td>
<td>Mild to Moderate</td>
<td>18-24</td>
<td>3</td>
<td>15.79</td>
</tr>
<tr>
<td></td>
<td>Moderate to Severe</td>
<td>25-30</td>
<td>0</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Graph 3 - Group B HAM-A Score

![Graph 3 - Group B HAM-A score](image)
Table 4 - Group A pre HAM-A with NPRS

<table>
<thead>
<tr>
<th>Karl Pearson correlation coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A - PRE</td>
</tr>
<tr>
<td>HAM-A with NPRS</td>
</tr>
</tbody>
</table>

Karl Pearson’s correlation coefficient was used to find the correlation between HAM-A with NPRS score. The correlation coefficient was 0.30 with p value 0.21. The p value more than 0.05 shows the no significant correlation between HAM-A with NPRS score.

Scatter diagram

Table 5 - Group A post HAM-A with NPRS

<table>
<thead>
<tr>
<th>Karl Pearson correlation coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A - POST</td>
</tr>
<tr>
<td>HAM-A with NPRS</td>
</tr>
</tbody>
</table>

Karl Pearson’s correlation coefficient was used to find the correlation between HAM-A with NPRS score. The correlation coefficient was 0.30 with p value 0.21. The p value more than 0.05 shows the no significant correlation between HAM-A with NPRS score.
Karl Pearson correlation coeff.

Group B - PRE  

<table>
<thead>
<tr>
<th></th>
<th>r value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAM-A with NPRS</td>
<td>0.44</td>
<td>0.057</td>
</tr>
</tbody>
</table>

Karl Pearson's correlation coefficient was used to find the correlation between HAM-A with NPRS score. The correlation coefficient was 0.44 with p value 0.057. The p value more than 0.05 shows the no significant correlation between HAM-A with NPRS score.
Table 7 - Group B - POST - HAM-A with NPRS

<table>
<thead>
<tr>
<th>Karl Pearson correlation coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group B - POST</td>
</tr>
<tr>
<td>HAM-A with NPRS</td>
</tr>
</tbody>
</table>

Karl Pearson's correlation coefficient was used to find the correlation between HAM-A with NPRS score. The correlation coefficient was 0.05 with p value 0.83. The p value more than 0.05 shows the no significant correlation between HAM-A with NPRS score.

Scatter diagram:

Table 8 - Group A - NPRS - (Paired t test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPRS</td>
<td>PRE Test</td>
<td>19</td>
<td>4.36</td>
<td>1.67</td>
<td>6.29</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>POST Test</td>
<td>19</td>
<td>2.00</td>
<td>1.41</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The comparison of pre and post test means of NPRS were done by paired t test. The pre test NPRS average was 4.36 with standard deviation of 1.67. The post test NPRS average was 2.00 with standard deviation of 1.41. The test statistics value of the paired t test was 6.29 with p value 0.00. The p value less than 0.05, hence reject the null hypothesis. That means there is significant difference in pre and post test NPRS average score.
Graph 4- Group A pre and post test NPRS score

![Graph 4- Group A pre and post test NPRS score](image)

Table 9- Group B NPRS - (Paired t test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group B</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPRS</td>
<td>PRE Test</td>
<td>19</td>
<td>4.11</td>
<td>1.37</td>
<td>3.75</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>POST Test</td>
<td>19</td>
<td>3.58</td>
<td>1.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The comparison of pre and post test means of NPRS were done by paired t test. The pre test NPRS average was 4.11 with standard deviation of 1.37. The post test NPRS average was 3.58 with standard deviation of 1.17. The test statistics value of the paired t test was 3.75 with p value 0.001. The p value less than 0.05, hence reject the null hypothesis. That means there is significant difference in pre and post test NPRS average score.
Graph 5- Group B pre and post test NPRS score

![NPRS - (Paired t test)](image)

Table 10 - Group A and Group B NPRS - (Unpaired t test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>POST Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPRS</td>
<td>Group A</td>
<td>19</td>
<td>2.00</td>
<td>1.41</td>
<td>3.75</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>19</td>
<td>3.58</td>
<td>1.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The comparison of post test means of NPRS were done by unpaired t test. The group A NPRS average was 2.00 with standard deviation of 1.41. The group B NPRS average was 3.58 with standard deviation of 1.17. The test statistics value of the unpaired t test was 3.75 with p value 0.001. The p value less than 0.05, hence reject the null hypothesis. That means there is significant difference in NPRS average score of Group A and group B.
Graph 6 - NPRS - Group A and Group B Post Test - (Unpaired t Test)

Table 11 - Group A - HAM- A - (Paired t test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAM- A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRE Test</td>
<td>19</td>
<td>11.05</td>
<td>5.46</td>
<td>5.59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>POST Test</td>
<td>19</td>
<td>5.84</td>
<td>3.13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The comparison of pre and post test means of HAM- A were done by paired t test. The pre test HAM- A average was 11.05 with standard deviation of 5.46. The post test HAM- A average was 5.84 with standard deviation of 3.13. The test statistics value of the paired t test was 5.59 with p value 0.00. The p value less than 0.05, hence reject the null hypothesis. That means there is significant difference in pre and post test HAM- A average score.
GRAPH 7- GROUP A - HAM- A - (PAIRED T TEST)

Table 12- Group B - HAM- A - (Paired t test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group B</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAM- A</td>
<td>PRE Test</td>
<td>19</td>
<td>9.73</td>
<td>4.16</td>
<td>6.86</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>POST Test</td>
<td>19</td>
<td>7.31</td>
<td>3.11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The comparison of pre and post test means of HAM- A were done by paired t test. The pre test HAM- A average was 9.73 with standard deviation of 4.16. The post test HAM- A average was 7.31 with standard deviation of 3.11. The test statistics value of the paired t test was 6.86 with p value 0.00. The p value less than 0.05, hence reject the null hypothesis. That means there is significant difference in pre and post test HAM- A average score.

Graph 8- Group B HAM- A - (Paired t test)
The comparison of post test means of HAM- A were done by unpaired t test. The group A HAM- A average was 5.84 with standard deviation of 3.13. The group B HAM- A average was 7.32 with standard deviation of 3.11. The test statistics value of the unpaired t test was 1.46 with p value 0.154. The p value more than 0.05, hence accept the null hypothesis. That means there is no significant difference in HAM- A average score of Group A and group B.
RESULT:
A total of 73 participants were recruited, amongst which 26 were excluded on the basis of above criteria, 6 declined to participate and 3 were unable to participate. Thus, in all, 38 participants were allocated, 19 in Group A - Stretching with Jacobson relaxation technique and 19 in Group B - Aerobics with Jacobson relaxation technique. Statistically, there is no significant difference in HAM-A average score of Group A and Group B having p value 0.154. The test statistics value of the unpaired t test was 3.75 with p value 0.001, hence reject the null hypothesis. That means there is significant difference in the NPRS average score of Group A and group B.

DISCUSSION:
In the present study, we examined the effects of stretching and Aerobics with Jacobson's routine over a 3 week period on the Peri-menopausal women having anxiety and low back pain. Peri-menopause causes fluctuations in the level of stress hormones including cortisol which induces anxiety, stress, hot flushes, pain etc. Jacobson relaxation technique sends signals to limbic system which inhibits within brain axes, including the hypothalamic-pituitary-adrenal axis. This axis is responsible for production of stress hormones. Thus, the production of cortisol decreases which may result in lowering anxiety in perimenopausal women. This study is a RCT, which shows that stretching with Jacobson's relaxation technique improves peri-menopausal anxiety and low back pain symptoms as compared to Aerobics with Jacobson's relaxation technique which coincides with the study done by Dr. Ketki Ponde et al in 2019 that concludes 6 weeks of yoga exercises showed comparatively significant improvement in climacteric symptoms, perceived stress and quality of life than walking in Perimenopausal women aged from 40-55 years. A Significant improvements in GDSS (Glasgow dyspepsia severity score), cortisol, VAS, PSQI (Pittsburgh sleep quality index), and DASS-42 could be achieved after adding adjunctive therapies – aerobic exercise and BRT – to the medications of FD in perimenopausal women. Compared to BRT alone, physical exercise plus BRT significantly increases the levels of estradiol in perimenopausal women with FD according to the study conducted by A. M. Ali Ismail et al in 2022. Hence, the increase in estradiol causes reduction in symptoms of perimenopause like anxiety and pain. The present study concludes a significant role aerobic exercise in improving estradiol levels. Exercise causes repeated stimulation of CNS which improves the secretion of sex hormones, including estrogen. The presence of estrogen receptors on pain neuronal afferents regulates the expression of messenger-RNA coding receptors. This regulation stimulates pain-relieving pathways within the central nervous system in patients with cronic disorders. Aiello et al 2004 carried out a weekly stretching session for the control group in an RCT involving postmenopausal women. They concluded that neither moderate-intensity exercise nor stretching improved menopausal symptoms, including depressive feelings, and that moderate-intensity exercise, five times per week, slightly increased the incidence of severe hot flashes. Frequent exercise has also been often linked to an elevated risk of hot flashes among middle-aged women. The stretching program in...
their study was successful as a control condition, but did not achieve the desired effect. The present study was designed for stretching and aerobics in which stretching did not show any adverse effect and there was significant improvement in the pain symptoms of participants as compared to Aerobics. The results of present study suggest that stretching with Jacobson relaxation technique can be safely and frequently practised by perimenopausal women. In the present study, there were lack of diagnostic tools to assess the effects of stretching and aerobics on serum Follicular Stimulating Hormone and estradiol levels in Perimenopausal women. In future, more studies can be carried out using diagnostic tools to assess Follicular Stimulating Hormone and estradiol levels before and after the intervention.

**CONCLUSION:**

The present study concluded that Stretching with Jacobson relaxation technique has a considerable improvement in anxiety and low back pain in Peri-menopausal women as compared to Aerobics with Jacobson relaxation technique.

**LIMITATIONS:**

1. No long term follow up was maintained.
2. Sample size of the present study was typically small.

**FUTURE SCOPE:**

As there are physiological changes occurring in body, advanced intervention strategies to treat Anxiety and Low back pain in Peri-menopausal women can be conducted

**CLINICAL IMPLICATIONS:**

Stretching with Jacobson Relaxation Technique can be beneficial as an additional intervention to reduce Anxiety and low back pain in Peri-menopausal women.

**ACKNOWLEDGEMENT:**

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