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Effects of Pilates Versus Mitchell's Relaxation Technique on Collagiates with Premenstrual Syndrome: A Comparative Study

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Abstract

Background: Premenstrual syndrome (PMS) is a common condition among women of reproductive age, characterized by recurrent physical, psychological, and behavioral symptoms during the premenstrual phase. These symptoms may interfere with daily activities and academic functioning. Non-pharmacological approaches such as Pilates exercises and relaxation techniques may help in reducing PMS symptoms.

Objective: To compare the effects of Pilates exercises and Mitchell's relaxation technique on PMS among collegiate women.

Methods: A pre-test and post-test two-group comparative study was conducted among 40 collegiate women with PMS. Participants were divided into two groups of 20 each. Group A received Pilates exercises, while Group B received Mitchell's relaxation technique. Both interventions were administered for 30 minutes, three sessions per week, for six weeks. The Premenstrual Syndrome Scale (PMSS) was used to assess PMS symptoms before and after the intervention. Data were analyzed using paired and independent t-tests, with statistical significance set at $p < 0.05$.

Results: Both groups demonstrated a statistically significant improvement in PMSS scores following the intervention ($p < 0.05$). The post-test mean PMSS score was 45.90 ± 6.08 in Group A and 50.20 ± 5.07 in Group B. The findings indicated a greater improvement in the Pilates group compared with the Mitchell's relaxation group.

Conclusion: Both Pilates exercises and Mitchell's relaxation technique were effective in improving PMS symptoms among collegiate women. However, Pilates exercises demonstrated a greater improvement compared with Mitchell's relaxation technique.

Keywords: Premenstrual syndrome; collegiate women; Pilates exercises; Mitchell's relaxation technique; Premenstrual Syndrome Scale.

Introduction

Premenstrual syndrome (PMS) is a common condition among women of reproductive age, characterized by recurrent physical, psychological, and behavioral symptoms during the premenstrual phase. Symptoms such as fatigue, headache, breast tenderness, abdominal discomfort, irritability, and mood changes may affect daily activities and academic performance. [2,12,17,18]

Management of PMS includes pharmacological and non-pharmacological approaches. Exercise and relaxation techniques are simple and economical methods that may help reduce PMS symptoms and improve physical and psychological well-being. [6,9,21,26]

Pilates involves controlled movements, breathing, core activation, flexibility, and postural control and has been reported to improve PMS symptoms in young women. [1,3,4,20] Mitchell's relaxation technique uses controlled muscle activation, relaxation, and breathing based on the principle of reciprocal inhibition, which may help reduce physical and psychological tension. [6,7,22,23]

The Premenstrual Syndrome Scale (PMSS) is a self-report tool used to assess premenstrual symptoms. Therefore, the present study compared the effects of Pilates exercises and Mitchell's relaxation technique on PMS among collegiate women.

Methodology

Study Design and Participants

The study was approved by the Institutional Ethics Committee (IEC-RIPT/DT/21/4502). A comparative study was conducted over a period of six months at Revathi Institute of Physiotherapy and Research, Avinashi, Tiruppur. A total of 40 collegiate women aged 18–25 years with premenstrual syndrome (PMS) were recruited using simple random sampling. randomly allocated into two groups of 20 participants each. Group A received Pilates exercises, while Group B received Mitchell's relaxation technique. Written informed consent was obtained from all participants before enrolment.

Inclusion and Exclusion Criteria

Female collegiate students aged 18–25 years with a regular menstrual cycle of 21–35 days, diagnosed with PMS, and experiencing moderate PMS symptoms were included. Participants who were willing to participate, able to follow instructions, and not taking medication for relief of PMS symptoms were also included.

Participants aged above 25 years, those who were pregnant, or those with musculoskeletal, neurological, or cardiac conditions, recent surgery, polycystic ovary syndrome (PCOS)/polycystic ovarian disease (PCOD), or other medical conditions were excluded.

Intervention

Group A – Pilates Exercises:

Participants performed a 5-minute warm-up followed by basic Pilates exercises and a 5–7-minute cool-down. The exercise programme included pelvic rocking, single- and double-leg lifts, leg circles, single- and double-leg stretches, spine stretch forward, controlled core activation, breathing, and postural exercises. Exercises were performed for 8–10 repetitions, three times per week for six weeks.

Group B – Mitchell's Relaxation Technique:

Participants performed Mitchell's relaxation technique in a supine or half-lying position. The technique involved systematic relaxation of different muscle groups, including the jaw, tongue, eyes, head, shoulders, elbows, fingers, thighs, knees, and feet, along with controlled breathing and whole-body awareness. Each session lasted 30 minutes and was conducted three times per week for six weeks during the luteal phase.

Outcome Measures

The Premenstrual Syndrome Scale (PMSS) was used to assess PMS symptoms. The PMSS was administered before and after completion of the six-week intervention programme.

Statistical Analysis

Data were analyzed using SPSS version 24.0. The Shapiro–Wilk test was used to assess the normality of the data. Within-group comparisons were performed using the paired t-test, while between-group comparisons were analyzed using the independent t-test. Statistical significance was set at $p < 0.05$.

Demographic Variables

A total of 40 collegiate women with PMS were enrolled and equally allocated into Group A (Pilates exercises, n = 20) and Group B (Mitchell's relaxation technique, n = 20). Demographic characteristics were recorded at baseline and are presented in Table

Result

A total of 40 collegiate women with premenstrual syndrome (PMS) participated in the study, with 20 participants allocated to each group. The pre-test and post-test Premenstrual Syndrome Scale (PMSS) scores were analyzed within and between the groups.

At baseline, there was no statistically significant difference in PMSS scores between Group A and Group B ($t = 0.354$, $p = 0.725$), indicating that the groups were comparable before the intervention. Following the intervention, a statistically significant difference was observed between the groups in the post-test PMSS scores ($t = -2.42$, $p < 0.05$).

In Group A, the mean PMSS score decreased from 56.40 ± 7.96 at pre-test to 45.90 ± 6.08 at post-test. In Group B, the mean PMSS score decreased from 55.65 ± 5.13 at pre-test to 50.20 ± 5.07 at post-test.

Within-group analysis revealed a statistically significant reduction in PMSS scores in both groups. Group A demonstrated a paired t-value of 14.15 ($p < 0.05$), whereas Group B demonstrated a paired t-value of 7.98 ($p < 0.05$). The greater reduction in PMSS scores observed in Group A suggests that Pilates exercises were more effective than Mitchell's relaxation technique in reducing PMS symptoms among collegiate women.

Discussion

The present study compared the effects of Pilates exercises and Mitchell's Relaxation Technique on premenstrual syndrome (PMS) among 40 collegiate women. Participants were randomly allocated into two groups, with Group A receiving Pilates exercises and Group B receiving Mitchell's Relaxation Technique for six weeks. Pre- and post-intervention PMSS scores were analyzed using paired and unpaired *t*-tests.

Both groups demonstrated statistically significant improvements in PMSS scores following the intervention. Pilates exercises may help alleviate PMS symptoms through core muscle strengthening, improved postural alignment, controlled breathing, and enhanced psychological well-being [1,3,4]. Mitchell's Relaxation Technique may reduce muscular tension and promote relaxation through reciprocal inhibition, potentially improving physical and psychological symptoms associated with PMS [6,7].

Although both interventions were effective, the greater reduction in PMSS scores in Group A suggests that Pilates exercises may provide additional benefits through their combined effects on muscle strength, breathing control, and physical and psychological well-being. Thus, Pilates exercises and Mitchell's Relaxation Technique may both be beneficial in managing PMS symptoms among collegiate women, with Pilates demonstrating a greater improvement in the present study.

Conclusion

The present study concluded that both Pilates exercises and Mitchell's Relaxation Technique were effective in improving PMSS scores among collegiate women with premenstrual syndrome following six weeks of intervention. However, Pilates exercises demonstrated a greater reduction in PMSS scores compared to Mitchell's Relaxation Technique. Therefore, Pilates exercises may be considered a beneficial physiotherapy intervention for managing PMS symptoms among collegiate women.

Limitations and Recommendations

The study was limited by the inclusion of participants aged 18–25 years, a small sample size, and the absence of long-term follow-up. Future studies should include broader age groups, larger sample sizes, and longer follow-up periods to assess the sustainability of treatment effects and improve the generalizability of the findings. Further research may also explore comprehensive therapy strategies for achieving sustained outcomes.

Informed consent

Written informed consent was obtained from all participants before the commencement of the study. Participation was voluntary, and confidentiality of participant information was maintained throughout the study.

Conflict of interest

The authors declare that they have no conflict of interest regarding the publication of this study.

Authors contribution

Akshaya M.B: Conceptualization, methodology, participant recruitment, data collection, statistical analysis, manuscript preparation, and manuscript revision.

Dr. Stanley E, Dr. S Ramkumar & Dr. Prabhuraja R: Study conception and design, supervision, methodology validation, interpretation of results, critical revision of the manuscript, and final approval of the manuscript.

Dr. P Bright Alwin Victor: Administrative support, overall academic guidance, and final approval of the manuscript.

Data availability statement

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request.

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