



TO COMPARE THE EFFECTS OF KEGELS COMBINED WITH YOGA VERSUS KEGELS COMBINED WITH PILATES ON WOMEN WITH STRESS URINARY INCONTINENCE

Physiotherapy

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ABSTRACT

Background: Urinary incontinence is a prevalent medical condition marked by the unintentional leakage of urine. While it can affect individuals of any age or gender, it is particularly common among women and can significantly affect their quality of life. Moreover, it imposes substantial personal and societal costs. Among the various types of urinary incontinence, stress incontinence has a higher occurrence in women under the age of 40. Surprisingly, even when diagnosed, only a small proportion of affected women receive effective treatment. **Aim:** The aim of this study is to compare the effectiveness of two programs: Kegels combined with yoga and Kegels combined with Pilates, in improving pelvic floor muscle strength among women experiencing stress urinary incontinence. Specifically, our objective is to ascertain whether one of these programs exhibits greater efficacy in alleviating the symptoms of stress urinary incontinence. **Methodology:** A pre-test, post-test experimental study design was employed. A Criterion-based simple convenient sampling was utilized to recruit patients diagnosed with stress urinary incontinence, who were then divided into two treatment groups (N=20). Group A received a combination of Kegel exercises and yoga (n=10), while Group B underwent Kegel exercises paired with Pilates (n=10). The assessment of urine leakage was quantified using a 24-hour pad test. **Result:** A eight-week intervention on stress urinary incontinence was studied in two groups (Group A, n=10; Group B, n=10). Both groups showed significant improvements in the 24-hour pad test (paired t-tests, $P < 0.05$). Unpaired t-tests between groups revealed a significant difference ($P < 0.05$), with Group B (md=1.2) showing a higher mean difference than Group A. This suggests a more pronounced effect of the intervention on Group B participants. **Conclusion:** The study's findings indicate substantial improvements in both Group A, which followed a regimen of yoga and Kegels exercises, and Group B, which engaged in Pilates alongside Kegel exercises. Additionally, the results reveal a statistically significant difference between the outcomes of Group A and Group B. Notably, Group B exhibited a greater degree of improvement compared to Group A.

KEYWORDS

Stress urinary incontinence, Kegels exercise, Pilates exercise, Yoga, 24 Hours Pad test, Quantification of urine loss.

INTRODUCTION

Urinary incontinence is a common medical condition characterized by the involuntary loss of urine. It can occur in people of all ages and sex, but it is more common particularly in women. Urinary incontinence is considered as a stigmatizing condition in most populations which contributes to low rates of presentation for care and creates a high risk for respondent bias in observational studies. Urinary incontinence can be a source of embarrassment and can significantly affect a person's quality of life.

There are several types of urinary incontinence, including stress incontinence, urge incontinence, overflow incontinence, mixed incontinence, and functional incontinence. Each type of incontinence has different causes and treatment options.

The most common type of urinary incontinence is Stress urinary incontinence, which occurs when physical activities such as coughing, sneezing, laughing, or exercising put pressure on the bladder and cause involuntary urine leakage.

Stress urinary incontinence is more common in women than in men and is often caused by weakened pelvic floor muscles due to factors such as pregnancy, childbirth, and menopause.

The prevalence of Stress urinary incontinence in India ranges from 7% to 33% among women of reproductive age, and it increases with age. In a study published in the Indian Journal of Urology, the prevalence of Stress urinary incontinence was found to be 38.6% among women aged 40 to 59 years in a rural area of South India.

There are several treatment options available for Stress urinary incontinence, which include: lifestyle changes, pelvic floor exercises, medication, and surgery. Pelvic floor muscle exercises also known as Kegel exercises, these exercises can help strengthen the muscles that control urination and can help in reducing leakage and improving bladder control.

Kegel exercises are a type of pelvic floor exercise that involves contracting and relaxing the muscles of the pelvic floor, which

supports the bladder, uterus, and rectum. These exercises are often recommended to help manage Stress urinary incontinence as it strengthens the pelvic floor muscles, reduces frequency of incontinence and easy to be done.

Yoga has been shown to help reduce stress and anxiety, which can be a trigger for Stress urinary incontinence.

Pilates exercises can provide several benefits for individuals with Stress urinary incontinence as it concentrates on core muscle Strengthening and it has direct relationship with both pelvic floor muscles and intra-abdominal pressure. Pilates also can improve posture and alignment, which can help to reduce pressure on the bladder and pelvic floor muscles.

Despite the International classification of disease (ICD) general public are largely unaware of urinary incontinence as a disease; Stress urinary incontinence is common among middle aged women and pelvic floor muscle strengthening exercises tends to show effect on Urinary incontinence, the study is to investigate which type of exercise shows more significance in treatment of Stress urinary incontinence.

MATERIALS & METHODS

Subjects

Subjects were recruited based on a positive cough stress test. To be eligible, postmenopausal women above 45 years of age were included, reporting experiencing incontinence for at least 3 months. Additionally, they were required to document at least 7 episodes of incontinence during the screening period using a 7-day voiding diary, specifying the type of stress urinary incontinence.

Exclusion criteria included other types of incontinence (urge, coital, postural), pregnancy, and subjects with abdominal hernias.

Study Design

A pre and post-test experimental study design was used with different intervention on 2 groups to assess the effect of kegels combined with yoga and kegels combined with pilates on women with stress urinary incontinence.

Methods

After obtaining informed consent, subjects were stratified into two groups through a convenient sampling method before undergoing therapeutic interventions. Group 1 engaged in a combination of Kegel exercises and yoga, while Group 2 participated in a combination of Kegel exercises and Pilates. The therapeutic interventions were administered for a duration of 8 weeks. To assess the effectiveness between Group 1 and Group 2, the quantification of urine loss, measured through a 24-hour pad test, served as the outcome parameter. The measurement tool utilized in this study was demonstrated to be reliable and valid in previous research. Assessments were conducted for all 20 patients using the 24-hour pad test on the first day of treatment and at the conclusion of the 8-week period.

Description of the Interventions

Kegels: Subjects of both groups are given Kegels exercises. To perform Kegels, individuals must identify the pelvic floor muscles. Once the pelvic floor muscles have been identified, Kegels exercises can be performed by contracting the muscles for a few seconds and then relaxing them for a few seconds. The regimen involves two sessions a day for 30 minutes, six days a week, for eight weeks. Kegels can be done in a variety of positions: (1) supine, (2) bridging, (3) cat and camel, (4) long sitting, (5) cross-sitting, and (6) standing.

Yoga: The yoga program focuses on a core set of seven postures that are widely used in Hatha yoga practice: (1) Savasana, (2) Tadasana, (3) Ukatasana, (4) Trikonasa, (5) Malasana, (6) Viparita Karani variation, and (7) Supta Baddha Konasana. Yoga is performed once a day, with each session lasting about 30 minutes, and participants engage in five repetitions. This routine is followed for four days per week over an eight-week period. Subjects are instructed to visually learn the yoga postures from the therapist before executing them.

Pilates: The subjects of Group B performed Pilates exercises, involving 10 specific core and pelvic floor muscle-focused exercises: (1) Pelvic Clock, (2) Basic Bridging with Adductor Squeeze, (3) Bent Knee Fall Out, (4) Standing Leg Pump, (5) Assisted Squats, (6) Roll Down Series, (7) Dead Bug, (8) Hundred with a Ball, (9) Book Open, and (10) Quadruped. These exercises were conducted in a single session lasting 45 minutes, four days per week, for a duration of 8 weeks. Subjects were instructed to visually learn the exercises from the therapist before executing them.

Data Analysis

Data of the subjects were analysed using the paired and unpaired t-test formula as shown in the table 1 and 2 respectively. The paired 't' test was used to compare the pre and post test values of group A & B and the unpaired 't' test was used to compare the pre-test of group A&B and post-test of group A&B.

RESULTS

A total of 20 patients with Stress urinary incontinence who met the predetermined inclusion and exclusion criteria were selected and divided into two groups. Group A underwent Kegels with yoga, while Group B underwent Pilates along with Kegels.

The paired 't' test analysis for the pre-test and post-test variables are by using 24 hrpad tests for group A and group B patients with Stress urinary incontinence, both the groups shows significant difference in pre-test and post- test values. The 't' values of Group A are 4.926 and the 't' values for the Group B are 11.500. Fig.1.1

The unpaired 't' test analysis for the post- test values of both group A and group B by 24-hour pad test measuring quantification of urine loss in women with Stress urinary incontinence which was shown in table 3 and 4. The unpaired 't' value for the post- test variable of both group A and group B are 4.592 and the p value is (p<0.05). Fig.1.2

The statistical analysis revealed that there is statistically significant improvement on stressurinary incontinence in both group A & B and there is more improvement in group B than group A.

Table.1

Formula	Group A			Group B		
$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$	Pre-test	Standard deviation	Mean difference	t- value	Standard deviation	Mean difference
		17.32	12.40	4.926	13.743	46
	Post-test	19.29			3.944	11.500

Table 2

Formula	Pre-test			Post-test		
	Group A	Standard deviation	Mean difference	t- value	Standard deviation	Mean difference
		17.33	5	0.71	19.29	28.66
	Group B	13.34		5	3.94	4.592

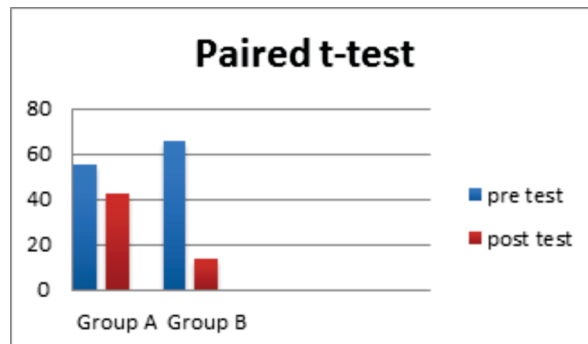


Fig.1.1

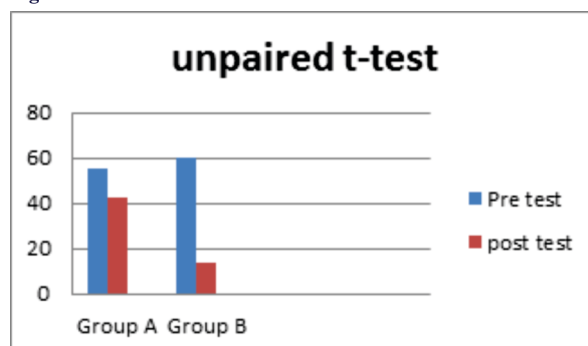


Fig.1.2

DISCUSSION

The purpose of this study is to investigate the effectiveness of two different programs, yoga and Pilates with Kegels, in improving pelvic floor muscle strength in women with Stress urinary incontinence.

According to the International Continence Society, the reported prevalence of Stress urinary incontinence in adult women varies widely, ranging from 35% to 72%.

A total of 20 patients with Stress urinary incontinence who met the predetermined inclusion and exclusion criteria were selected and divided into two groups. Group A underwent Kegels with yoga, while Group B underwent Pilates along with Kegels. Statistical analysis using an unpaired t-test revealed a significant difference in the effectiveness of Kegels with yoga compared to Kegels with Pilates in women with Stress urinary incontinence.

Previous studies have shown that Kegel exercises are a popular method for strengthening pelvic floor muscles and are a safe and effective conservative treatment for urinary incontinence. Our study builds upon this by incorporating Kegel exercises in both groups. The results of our study support the effectiveness of behavioural strategies such as pelvic floor muscle exercises and core strengthening exercises in treating incontinence. Specifically, pelvic floor muscle exercises strengthen the pelvic floor muscles, providing support to the urethra and proving to be more successful in treating Stress urinary incontinence.

Moreover, our study demonstrates that Pilates exercises specifically target and engage the core muscles, including the transversus abdominis, pelvic floor muscles, diaphragm, and multifidus, which play a crucial role in maintaining urinary continence. These exercises promote strength and stability in the core muscles, providing support to the pelvic organs and helping control bladder function. This finding is consistent with previous research by Deborah J., who showed that a 12-week Pilates pelvic floor-strengthening program had positive effects on the treatment of Stress urinary incontinence.

Similarly, yoga, as a set of physical and mental practices, offers therapeutic benefits for Stress urinary incontinence. Through specific yoga postures, yoga promotes awareness and control over individual muscle groups, including the pelvic floor muscles. A study conducted by Michael S. highlighted the potential of yoga as a complimentary behavioral intervention for Stress urinary incontinence.

Our study explored the feasibility and acceptability of integrating Kegels with yoga and Kegels with Pilates as physical activity interventions for women with Stress urinary incontinence. Combining these approaches provides a holistic approach to fitness, emphasizing core strength, stability, and body awareness. This integrated approach shows effectiveness in improving symptoms of Stress urinary incontinence, with Pilates exercises showing greater improvement compared to yoga and Kegels alone. A strong core not only supports the pelvic floor muscles but also enhances coordination and control during movements that can trigger Stress urinary incontinence.

The study's findings demonstrate significant improvement in pelvic floor strength for both Group A (yoga and Kegels) and Group B (Pilates and Kegels), with Group B showing greater improvement. These findings highlight the potential of combining Pilates exercises with Kegels to enhance the treatment of Stress urinary incontinence.

This study is the first to compare the effects of Kegels with yoga and Pilates in women with Stress urinary incontinence.

Limitations

The study exhibits certain limitations that could affect the accurate isolation of therapeutic intervention effects. Firstly, the absence of a control group raises concerns about establishing a baseline for comparison. Additionally, the narrow age range (45-60) and limited sample size may limit the generalizability of the findings. The exclusive focus on females, particularly postmenopausal women, further narrows the study's applicability to a broader population. Consideration of these factors is crucial for a comprehensive evaluation of the research outcomes.

Further Directions Of This Study: In addition to the mentioned types of incontinence, various forms can be explored. Randomization and blinding techniques can be employed to ensure a robust study design. Consideration of alternate outcome measures and inclusion of other relevant variables will contribute to a comprehensive and insightful analysis.

CONCLUSION

The aim of this study is to compare the effect of Kegels when combined with yoga and Kegels when combined with Pilates in improving pelvic floor muscle strength among women suffering from Stress urinary incontinence. Specifically, the study seeks to determine which program is more effective in reducing the symptoms of Stress urinary incontinence.

Twenty patients who met the predetermined inclusive and exclusive criteria for Stress urinary incontinence were selected and divided into two groups, each comprising 10 participants. Group A underwent Kegels combined with yoga, while Group B underwent Kegels combined with Pilates. To quantify urine loss, we employed a 24-hour pad test. The treatment duration spanned 8 weeks, during which we measured the outcome variables both before the start of treatment (Day 1) and at the conclusion of treatment (the 8th week).

In conclusion the study suggest that the Kegels combined with Pilates program is more effective than the Kegels combined with yoga program for women dealing with Stress urinary incontinence.

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