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Research Article
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Yoga-Based Intervention And Its Effects On Body Composition In Post-Menopausal Women

Singh J[1*†]

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[1*†] Jagjiwan Singh, Yoga Instructor, Department of Physical Education, Punjabi University, Patiala, Punjab, India.

The current study, named "Yoga-Based Intervention and Its Effects on Body Composition in Post-Menopausal Women," looked at the effects of certain yoga therapies on Body Mass Index (BMI) and Basal Metabolic Rate (BMR) in post-menopausal women aged 45 to 60 years. Sixty residential women from Punjabi University, Patiala, were purposefully selected and randomly assigned to control (n = 30) and experimental (n = 30) groups. The experimental group received a six-month yoga intervention that included Pranayama, Asanas, ShudhiKriyas, and Meditation, delivered five days a week. A pre-test post-test control group design was adopted, and data were analysed using paired t-tests with a significance level at 0.05. The experimental group's BMI and BMR did not alter statistically significantly after the intervention, according to the data. These results imply that although yoga could have holistic health advantages, the particular protocol used in this study was insufficient to result in quantifiable changes in BMI, BMR variables of Body Composition over the study period.

Keywords: Yoga Therapy, Post-Menopausal Women, Body Mass Index (BMI), Basal Metabolic Rate (BMR), Body Composition, Pranayama, Asanas, ShudhiKriyas, Meditation

Corresponding Author

Jagjiwan Singh, Yoga Instructor, Department of Physical Education, Punjabi University, Patiala, Punjab, India.
Email: jagjiwansingh@gmail.com

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Introduction

In existing society, scientific advancements such as computers, automobiles, and televisions have contributed to increasingly sedentary lifestyles, reducing prospects for physical activity and negatively impacting public health. The pervasive lack of physical exercise and activities are now recognized as critical factors in the deterioration of human health, contributing to various chronic diseases and even premature mortality (Hill, 2003). Physical inactivity not only compromises musculoskeletal strength and cardiovascular function but also diminishes the body's ability to cope with physical and psychological stress, accelerating the aging process (Carpenter, 1987).

Yoga, an ancient Indian discipline that integrates physical postures (asanas), breathing techniques (pranayama), and meditation, has emerged as an effective form of mind-body exercise. Recognized globally for its therapeutic potential, yoga contributes to improved flexibility, balance, muscular strength, and mental well-being (Khalsa, 2004; Smith et al., 2007; Birdee et al., 2008). Unlike conventional physical exercises, yogic practices emphasize relaxation, controlled breathing, and awareness, providing physiological and psychological benefits with minimal energy expenditure (Veeraparameswari, 2015).

Among women, the menopausal transition (MT) represents a significant physiological milestone characterized by hormonal fluctuations that can influence body composition. The decline in estrogen levels during and after menopause is associated with increased fat mass, decreased lean body mass, and redistribution of adipose tissue, often leading to weight gain and altered metabolic profiles (Gail et al., 2019). These changes not only increase the risk of obesity-related complications but also negatively affect quality of life. While several studies have explored the role of exercise and dietary interventions in managing menopause-related changes, limited research has specifically examined the effectiveness of yoga therapies in addressing shifts in body composition among post-menopausal women. Given the gentle nature and accessibility of yoga, especially for individuals with limited aerobic capacity, it holds significant promise as a holistic, non-pharmacological intervention to support physical health during post-menopause.

In the modern era, technological advancements have contributed to increasingly sedentary lifestyles, leading to a rise in preventable health issues such as obesity, cardiovascular diseases, and musculoskeletal disorders. Physical inactivity has emerged as a major public health concern, adversely affecting the physical, mental, and emotional well-being of individuals. While conventional forms of physical activity are well known for improving health outcomes, ancient practices such as yoga have garnered growing attention for their holistic approach to health and wellness.

Yoga, an age-old discipline originating from India, emphasizes the union of body, mind, and spirit. It incorporates physical postures (asanas), breath regulation (pranayama), and meditation techniques, offering both physiological and psychological benefits. Unlike conventional exercise, yoga promotes internal awareness, energy conservation, and relaxation while simultaneously enhancing flexibility, muscular strength, cardiovascular function, and emotional resilience. Numerous studies have highlighted its therapeutic potential in managing stress, improving cardiovascular health, and supporting musculoskeletal integrity—especially during vulnerable stages of life such as menopause.

Despite the wealth of literature supporting the benefits of physical exercise and yoga independently, comparative studies exploring the distinctive contributions of yogic practices versus traditional physical activity—particularly among specific populations—remain limited. This research aims to bridge this gap by evaluating the impact of yoga in comparison to conventional exercise on key health indicators, with a special focus on middle-aged individuals navigating physiological changes such as menopause or age-related body composition shifts.

Statement of the Problem

The present study is entitled as "Yoga-Based Intervention and Its Effects on Body Composition in Post-Menopausal Women".

Objectives of the Study

01. To assess the effect of selected yoga therapies on the Body Mass Index (BMI) of post-menopausal females.

02. To evaluate the impact

01. of selected yoga therapies on the Basal Metabolic Rate (BMR) of post-menopausal females.

Hypotheses of the Study

01. There is a significant effect of selected yoga therapies on the Body Mass Index (BMI) of post-menopausal females.

02. There is a significant effect of selected yoga therapies on the Basal Metabolic Rate (BMR) of post-menopausal females.

Methodology

Selection of the Subjects

The present study was conducted on residential females of Punjabi University, Patiala. The study was confined to females of 45-60 years of age group. Total sixty (N=60) females are selected as subject for the present study. There were two groups, in this study 30 subjects for experimental group and 30 subjects for control group is taken. The data was collected with Purposive Sampling technique.

Selection of Variables

In consultation with the experts in the field, minutely going through the literature available and considering the feasibility criteria in mind, especially the availability of instrument. The following components of body composition variables are selected for the present study.

01. Body Mass Index (BMI)

02. Basal Metabolic Rate (BMR)

Instruments Used

For the purpose of this investigation researcher used Body Composition Analyser.

Design of the Study

Pre- test post- test experimental group design – Test Group Design was used for this study.

Training Protocol

Six months yoga therapy was administered to know the effect of selected yoga therapies on body composition of post-menopausal females. Six months of yoga therapies were applied on experimental group for five days in a week (from Monday to Friday). Saturday and Sunday was utilized for rest and relaxation for the subjects. Whole yoga therapy was administered only in the Morning session. Schedule was approved by three yoga experts of the field.

Statistical Procedure

In order to find out the effect of yoga therapies on body composition of post-menopausal females, after collecting the relevant data paired t- test was applied. The level of significance was set at 0.05.

Analysis and Interpretation of Data:

01. **Body Mass Index:**

Table No. 1

Shows the Descriptive data of Pre and Post-Experimental Groups for their Body Mass Index

Groups	MEAN	S.D	t-Ratio
Pre-Experimental Group	25.83333	5.037195	0.280264
Post-Experimental Group	25.53667	4.563233	

Tabulated t-value 0.05 (1.6715) df=58

Table and figure no. 1 provides descriptive statistics for the pre- and post-experimental groups regarding their Body Mass Index (BMI). The mean BMI for the pre-experimental group is 25.83 with a standard deviation (S.D.) of 5.04, while the post-experimental group has a slightly lower mean of 25.54 with an S.D. of 4.56. The calculated t-ratio is 0.2803, which is much smaller than the tabulated t-value of 1.6715 at the 0.05 level of significance with 58 degrees of freedom (df). Since the calculated t-value is less than the tabulated t-value, there is no statistically significant difference in BMI between the pre- and post-experimental groups. This result indicates that the experimental intervention did not cause a meaningful change in the Body Mass Index of the participants.

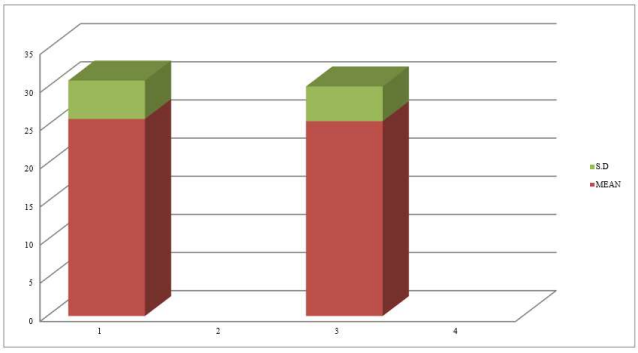

Figure No. 1

Shows the Descriptive Data of Pre and Post-Experimental Groups For Their Body Mass Index

01. **Basal Metabolic Rate:**

Table no. 2

Shows the Descriptive data of Pre and Post-Experimental Groups for their Basal Metabolic Rate

Groups	MEAN	S.D	t-Ratio
Pre-Experimental Group	1405.966667	166.2091502	0.348630721
Post-Experimental Group	1396.966667	167.7883485	

Tabulated t-value 0.05 (1.6715) df =58

Table and Figure no. 2 present the descriptive statistics for the pre- and post-experimental groups with respect to their Basal Metabolic Rate (BMR). The mean BMR for the pre-experimental group is 1405.97 with a standard deviation (S.D.) of 166.21, while the post-experimental group has a slightly lower mean of 1396.97 with an S.D. of 167.79. The calculated t-ratio is 0.3486, which is much smaller than the tabulated t-value of 1.6715 at the 0.05 level of significance with 58 degrees of freedom (df). Since, the calculated t-value is less than the tabulated value, there is no statistically significant difference in BMR between the pre- and post-experimental groups. This indicates that the experimental intervention did not have a meaningful impact on the Basal Metabolic Rate of the participants.

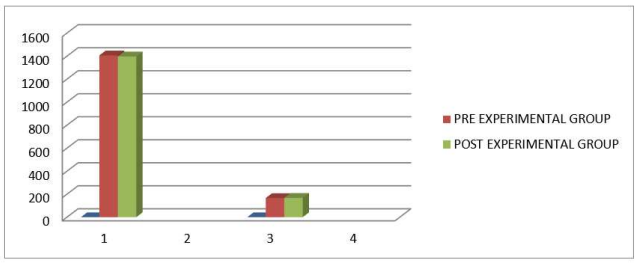

Figure No. 2

Shows the Descriptive data of Pre and Post-Experimental Groups for their Basal Metabolic Rate

Discussion

The present study aimed to evaluate the impact of an experimental intervention on Body Mass Index (BMI) and Basal Metabolic Rate (BMR) among participants. However, the statistical analysis did not yield significant results in either variable.

25. **Body Mass Index (BMI):** Table and Figure no. 1 reveals that the mean BMI of the pre-experimental group was 25.83 (S.D. = 5.04), while the post-experimental group had a slightly reduced mean of 25.54 (S.D. = 4.56). The calculated t-ratio (0.2803) was well below the tabulated t-value (1.6715) at the 0.05 level of significance with 58 degrees of freedom. This indicates that the difference in BMI before and after the intervention is not statistically significant.This finding suggests that the experimental intervention—possibly a short-duration program or one of insufficient intensity or adherence—did not elicit a measurable change in BMI. According to the World Health Organization (WHO, 2020), BMI is a general indicator of body fat but may not respond rapidly to short-term lifestyle interventions, particularly when dietary patterns and overall energy balance are not rigorously controlled.

Furthermore, similar results were observed in a study by Hall et al. (2011), which indicated that modest changes in physical activity without significant dietary modification are often insufficient to induce short-term changes in BMI. Given the multifactorial nature of BMI regulation, including genetic, dietary, and behavioural components (Hill, Wyatt, & Peters, 2012), it is plausible that a longer intervention period or more structured programming may be required to produce measurable results.

1405. **Basal Metabolic Rate (BMR):** In terms of BMR, Table 2 shows that the pre-experimental group had a mean BMR of 1405.97 kcal/day (S.D. = 166.21), while the post-experimental group had a mean of 1396.97 kcal/day (S.D. = 167.79). The calculated t-ratio was 0.3486, again below the critical value of 1.6715, indicating no statistically significant difference in BMR post-intervention.This lack of significance is consistent with previous literature, which shows that while physical activity can influence metabolic rate, changes in BMR typically occur in response to significant alterations in lean muscle mass or long-term energy intake/expenditure patterns (Leibel, Rosenbaum, & Hirsch, 1995).Since BMR is strongly influenced by factors such as age, gender, body composition, and hormonal status (Müller et al., 2011), short-term interventions may not be sufficient to produce discernible changes unless accompanied by structured resistance training or caloric restriction.

Conclusion

01. The findings of this study demonstrate that the experimental intervention did not significantly impact BMI among the participants.

02. The findings of this study demonstrate that the experimental intervention did not significantly impact BMI among the participants.

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