EFFECTS OF GENTLE YOGASANA ON HEMATOCRIT RESPONSE OF MIDDLE-AGED WOMEN

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Background: Middle-aged women frequently face hormonal shifts that bring about changes in various physiological functions, including blood components such as haematocrit. The biological reference percentage of Haematocrit in adult female is 36-46 %, which is a critical marker that affects oxygen-carrying capacity and circulatory efficiency (According to Medicity Laboratory). Gentle yogasana may positively influence hematocrit response by enhancing circulation and reducing stress. While several studies on Hematocrit have been conducted across different age groups, limited research has focused on middle-aged women. In this context, the researcher sought to investigate the effectiveness of gentle yogasana on hematocrit response.

Objectives: To assess the effect of gentle yogasana on hematocrit response of middle aged women.

Subjects: Total no of **Twenty Five (N=25), middle aged women (aged 40 to 60 yrs)** were randomly selected for the present study. The blood samples were collected with their prior concern and without any coercion.

Methods: Convenience sampling method has been used for this **experimental study.** Yoga treatment which includes fourteen (14) different gentle yogasana in supine, prone, sitting and standing position was given for 28 days. The Yoga program was planned under the guidance of Yoga Experts,**i) Prof. R. Elangovan,** Faculty of Science &therapy,MAHER, Chennai, Tamil Nadu and **ii) PratapSantra,** Yoga Instructor, University of kalyani, WB). Paired t-test (two-tailed) was conducted and the significance of Means were tested at $p<0.05$ level of significance.

Result: It was observed that the **Paired t-test** was found **significant** at **0.05 levels of significance**. The statistically significant differences was found between the Pre and Post Test in Hematocrit response.

Conclusion: Gentle Yogasana significantly improved hematocrit response of middle-aged women, indicating enhanced blood oxygen-carrying capacity and overall hematological health. The findings suggest that regular gentle yogasana practice can be an effective non-pharmacological intervention to support cardiovascular and circulatory function during midlife.

Keywords: Hematology, Hematocrit, Middle Aged Women ,Yoga and gentle Yogasana.

INTRODUCTION

Women in their middle years, typically aged 40 to 60, often undergo a significant life transition that brings about physical, emotional and social adjustments. Physiologically, this period of age is commonly characterized by menopause, which triggers hormonal fluctuations affecting sleep quality and bone strength. These shifts may also lead to physical symptoms such as hot flashes, exhaustion and emotional volatility. Emotionally, many women face increased demands as they balance careers, provide care for aging parents and support their children (**Rose, 1991**)

Hematology helps monitor blood health in middle-aged women, especially during menopause. Hematocrit response—measuring the proportion of red blood cells—can indicate anemia, dehydration or other health conditions. Hormonal changes may affect blood volume and iron levels. Hematocrit is a key marker for overall health assessment in this age group. Hematocrit is important to maintain in middle-aged women because it reflects the percentage of red blood cells in the blood, which is essential for carrying oxygen throughout the body. During middle age, especially around menopause, women may experience hormonal changes and menstrual irregularities that can lead to iron deficiency or anemia**,** affecting hematocrit response **(Jandl, 1996).**

Gentle yogasana is a low-impact practice rooted in Hatha Yoga, offers a therapeutic approach by emphasizing slow movements, breath control and relaxation. It maintain healthy hematocrit response in middle-aged women by improving blood circulation, stimulating bone marrow (which produces red blood cells) and enhancing oxygen delivery. Regular practice reduces stress and inflammation, both of which can negatively affect red blood cell production. Gentle Yogasana also supports hormonal balance during menopause, helping regulate menstrual irregularities that may lead to anemia. Additionally, improved digestion and metabolism through yoga aid iron absorption, a key factor in maintaining hematocrit. By promoting overall physical and emotional well-being, yoga creates optimal conditions for balanced blood composition and healthier red blood cell levels in this age group (**Clennell,2010)**.

METHODS

A total number of twenty-five (25) middle-aged women, aged between 40 and 60 years, were randomly selected from the KMDA Housing Complex, Kalyani, using convenience sampling techniques. The hematological indicator, hematocrit response**,** was assessed through blood analysis conducted at *Medicity Speciality Laboratory (ISO 9001:2025 certified).*

A specific gentle yogasana intervention comprising eleven (14) different asanas was administered. These postures included:

- **Supine positions**: Sarvangasana, Naukasana, ArdhaHalasana and Setubabdhasana
- **Prone positions**: Parvatasana, Modified Shalbhasana, and Sarpasana

- **Seated positions**: Ardha Ustrasana, Ardha Matsyendrasana and Paschimottanasana
- **Standing positions**: ParivrttaTrikonasana,Tadasana, Padahasthosana and Utkatasana.

The yoga regimen was conducted for a duration of four weeks, five days per week (evening sessions), with each session lasting 50 to 60 minutes. The program was executed following a structured training module under the guidance of yoga experts.

To evaluate the changes in the hematocrit response, both pre- and post-intervention blood samples were collected. Statistical analysis was performed using the paired t-test, and the difference in mean values was considered statistically significant at the $p < 0.05$ level.

RESULTS

Table:1 Hematocrit Response before and after yoga practice (Mean±SD)

Variable	Pre-test	Post-test	P value
Hematocrit	35.22±4.25	37.44±3.94	0.0001

*P' value was taken significant at <0.05, highly significant at <0.01 and very highly significant at <0.001.

DISCUSSION

A four-week gentle yogasana intervention demonstrated a statistically significant positive effect on hematocrit response among participants (Pre-test: 35.22 ± 4.25; Post-test: 37.44 ± 3.94). This improvement may be attributed to various physiological mechanisms associated with yoga practice. For instance, yoga is known to Increase blood perfusion throughout the body, which can stimulate hematopoietic activity in the bone marrow, thereby supporting red blood cells. Furthermore, the regulation of autonomic nervous system function through yoga promotes efficient oxygen utilization**,** mitigates stress responses, and may contribute indirectly to the maintenance of optimal hematocrit response. Additionally, gentle yoga may aid in the modulation of hormonal activity, which is particularly beneficial for middle-aged women, supporting overall hematological balance. The finding of the study can be supported by the study **(Ghosh, 2024), and (Sagre et al. 2023),** which shows the various types of gentle yogasana practices helps in increasing or balancing the hematocrit level in middle women population.

LIMITATIONS

The size of the sample was small with the absence of control group and the study was carried for a short period of time. Furthermore, observing on particular aspects for considerations as outcomes has neglected the other possible benefits of gentle yogasana. Gentle Yoga intervention on large subject and with the duration of longer time is necessary to support the conclusion.

CONCLUSION

Gentle yogasana significantly improved hematocrit response in middle-aged women, indicating enhanced blood oxygen-carrying capacity and overall hematological health. The findings suggest that regular gentle yogasana practice can be an effective non-pharmacological intervention to support cardiovascular and circulatory function during midlife.

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