

HEMATOLOGICAL MODULATION IN REGULAR PRACTICE OF YOGA

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Article Info: Received 03 July 2019; Accepted 04 August. 2019

DOI: <https://doi.org/10.32553/ijmbs.v3i8.457>

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Conflict of interest: No conflict of interest.

Abstract

Background: A significant effect of yoga has been noticed in decreasing the blood glucose level, the heart rate, and systolic and diastolic blood pressure. Blood contains predominantly three types of blood cells including red blood cells (RBC), white blood cells (WBC) and Platelets.

Methods- The study was carried out 100 volunteers. Study group comprised 50 male and 50 female healthy subjects of 18-20 years. Hematological parameters like total RBC Count, total W.B.C Count, hemoglobin content/dl and total Platelet count were determined by Improved Version of automated hematology auto-analyzer. For this Hemogram study, 5 ml of blood was collected in EDTA Vial under aseptic precautions.

Results: Regular practice of yoga for 3 months significantly improved the R.B.C., W.B.C., Platelet count and Hb content.

Conclusion- We concluded that regular practice of yoga for promotes trafficking of the stem cells from bone marrow and improve hematological parameters in anemia.

Keywords: Yoga, hematological parameters, Regular.

INTRODUCTION

Yoga, is a practice of mental and physical exercise techniques, aiming to acquire good health in human beings. Holistic health, integrative treatment and mind, body medicine are some of the current buzz words in health care originated actually from yoga, which took its birth some 6000 years ago in India and is one of the elements of ayurvedic medicine as the healing science¹

Yoga science is emerged as contemplation and also communion and yoking all powers of the body, mind, and soul to God. Yoga practices are gaining popularity and have the potential to make a significant contribution to the field of health sciences. Having a wide array of practice, all essentially including breathing exercises, physical postures and meditation, the science, and art of yoga is reaching new heights. Associated with a series of behavioral modifications that contribute to a healthy lifestyle, traditional yoga is a philosophy for living². The practice improves mood and reduces stress utilizing mind/body strategies designed to promote good health that covers relaxation techniques, hypnosis, visualization, feedback, Qigong, Tai Chi, meditation, autogenic, cognitive behavioral therapy, group

therapy, and spirituality. All these strategies are based on research conducted to establish if there is a link between the nervous, immune, and endocrine systems³.

Recently, scientists have explored its consistent beneficial biochemical, physiological, psychological effects in human beings. Yoga based training normalizes the functions of the autonomic nervous system by maintaining both sympathetic and parasympathetic indices toward normal. It is found that yoga has an immediate effect on the HPA axis (hypothalamic - pituitary axis) response to stress. Though precise mechanism has not yet been established. Its being hypothesized that some yoga exercises via vagus stimulation, lead to a shift toward parasympathetic nervous system predominance. A significant effect of yoga has been noticed in decreasing the blood glucose level, the heart rate, and systolic and diastolic blood pressure.⁴⁻⁵

A significant effect of yoga has been noticed in decreasing the blood glucose level, the heart rate, and systolic and diastolic blood pressure . Blood contains predominantly three types of blood cells including red blood cells (RBC), white blood cells (WBC) and Platelets. Red blood cells are concerned

with transport of oxygen to various tissues, white blood cells are basically defense system of body which helps fighting infections and platelets are the backbone of clotting system.⁶

MATERIAL AND METHODS

The study was carried out 100 volunteers. Study group comprised 50 male and 50 female healthy subjects of 18-20 years.

Hematological parameters like total RBC Count, total W.B.C Count, hemoglobin content/dl and total Platelet count were determined by Improved Version of automated hematology auto-analyzer. For this

Hemogram study, 5 ml of blood was collected in EDTA Vial under aseptic precautions.

Study group underwent yoga practices for 60 minutes twice a day in the presence of a trained yoga teacher for 12 weeks. The first observation of the study group was taken before start yoga practice. Second observation was carried out after 3 month of yoga practice from the start of study. The study protocol was explained to the subjects and written consent obtained.

RESULTS

Table 1: Showing changes in Total RBC Count/ c.mm, Total WBC Count/ c.mm, HB content/ dl and Total Platelet Count/ c.mm before and after three months of yoga practices in Females.

| Parameters | Before starting Yoga | | After 3 month of yoga | | p-value |
|--|----------------------|-------|-----------------------|-------|---------|
| | Mean | SD | Mean | SD | |
| RBC count/mm ³ | 3.24 | 0.135 | 4.21 | 0.65 | 0.001 |
| WBC count/mm ³ | 7412.24 | 214.3 | 6345 | 232.1 | 0.001 |
| HB gm/dl | 9.21 | 0.42 | 10.84 | 0.46 | 0.001 |
| Total platelets count count lac /mm ³ | 1.84 | 0.032 | 2.32 | 0.02 | 0.001 |

The Total RBC Count/ c.mm increased from mean value 324 ± 0.135 to $4.21 \pm .065$ ($p < 0.001$) statistically more significant & was due to the effects of regular practices of yoga.

The Total WBC Count/ c.mm decreased from mean value 7412.24 ± 214.3 to 6345 ± 232.1 ($p < 0.001$) statistically more significant & was due to the effects of regular practices of yoga.

The HB content gm / dl increased from mean value 9.21 ± 0.42 to 10.84 ± 0.46 ($p < 0.001$) statistically more significant & was due to the effects of regular practices of yoga.

Total Platelet Count in lacs / c.m.m. increased from mean value 1.84 ± 0.032 to 2.32 ± 0.02 ($p < 0.001$) statistically more significant & was due to the effects of regular practices of yoga.

Table 1: Showing changes in Total RBC Count/ c.mm, Total WBC Count/ c.mm, HB content/ dl and Total Platelet Count/ c.mm before and after three months of yoga practices in Males.

| Parameters | Before starting Yoga | | After 3 month of yoga | | p-value |
|--|----------------------|-------|-----------------------|--------|---------|
| | Mean | SD | Mean | SD | |
| RBC count/mm ³ | 4.56 | 0.112 | 4.98 | 0.21 | 0.001 |
| WBC count/mm ³ | 8657.23 | 214.3 | 7435.2 | 236.32 | 0.001 |
| HB gm/dl | 9.68 | 0.44 | 11.23 | 0.76 | 0.001 |
| Total platelets count count lac /mm ³ | 1.87 | 0.024 | 2.38 | 0.031 | 0.001 |

The Total RBC Count/ c.mm increased from mean value 4.56 ± 0.112 to 4.98 ± 0.21 ($p < 0.001$) statistically more significant & was due to the effects regular practices of yoga.

The Total WBC Count/ c.mm decreased from mean value 8657.23 ± 214.3 to 7435.2 ± 236.32 ($p < 0.001$) statistically more significant & was due to the effects of regular practices of yoga.

The HB content gm / dl increased from mean value 9.68 ± 0.44 to 11.23 ± 0.76 ($p < 0.001$) statistically more significant & was due to the effects of regular practices of yoga.

Total Platelet Count in lacs / c.m.m. increased from mean value 1.87 ± 0.024 to 2.38 ± 0.031 ($p < 0.001$) statistically more significant & was due to the effects of regular practices of yoga.

DISCUSSION

The study group volunteers showed the effect of yoga on total RBC Count was increased (<0.001), whereas total WBC Count was decreased (<0.001), hemoglobin content/dl was increased (<0.001), and total Platelet count was also increased (<0.001) and all these parameters were modulated due to regular practices of yoga. Practice of Yogasana improves biochemical profile indicating anti-stress and antioxidant effect, important in production of degenerative disorders. Earlier studies have shown significant improvement in RBC with practice of Yogasana for about 12 weeks. Apparent increase in the concentration of red blood corpuscles is due to mobilization of plasma from blood to tissue fluid. Besides this, Yogic asanas, pranayama and exercise makes a greater amount of oxygen supply thus putting into circulation the red blood corpuscles stored in spleen and accessory spleen. Asanas and exercise also increase the myoglobin pigment which is helpful to supply more amount of oxygen. Yogic asanas and pranayamas minimize all types of stress of body. Leucocytes count increase only when there is stress and allergy but the effect of yogic asanas decreases total leucocytes count indicating anti-stress and allergy but the effect of yogic asana decreases total leukocyte count indicating anti-stress mechanisms of the body whether it is physical physiological or psychological.⁷⁻¹⁰ There was significant improvement in Hemoglobin, MCH, and MCHC content in subjects after 6 weeks training course. yoga asanas significantly increase hemoglobin (Hb) content effect of Sudarshan Kriya yoga was also significantly increase hemoglobin content[25], it can be hypothesized that it is due to anti-stress and antioxidant effect of yoga. The effect of various yoga exercises on various hematological parameters such as platelet count, clotting time, and bleeding time reported that their platelet count and clotting time both were increased significantly.[26] The effect of yoga on anemic patients was significantly increase hemoglobin content due to increased red blood cell count can be explained by two different mechanisms; it may be due to hypoxia that release more erythropoietin during yoga practices and second is that yoga practices increased release of iron stores from reticulo endothelial cells and splenic contraction enhance the release of reserved RBCs.¹¹⁻¹²

CONCLUSION

Non pharmacological methods like yogic asanas, pranayama, and meditation promotes trafficking of the stem cells from bone marrow for possible repair and regeneration of worn out and degeneration of tissues. It can thus be concluded that these results would justify the incorporation of yoga as part of our life style and essence of the life. is cheap and cost-effective discipline.

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