EFFECTS OF YOGIC TRAINING ON SELECTED HEMATOLOGICAL VARIABLES AMONG COLLEGE STUDENTS

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Abstrac t

Yoga, is a practice of mental and physical exercise techniques, aiming to acquire good health in human beings. For thousands of years, Yoga an ancient holistic relaxation practice has been used as an effective therapeutic tool that counteracts the adverse clinical conditions of human beings. However, the underlying molecular mechanisms that explain these clinical benefits are still an enigma. The efficacy of Yoga and Meditation as an adjunct to routine management of various diseases and disorder is a great challenge in the present scenario. Ayurvedic knowledge of Yoga is much more incompatible with its understanding of biochemical and hematological changes. Exploring the biochemical association with various Yogic postures and practices will definitely improve the practice as therapeutic adjuvant and thus, will improve the quality of life. The aim of present study was to investigate whether regular practice of Yoga for one month can improve hematological parameters. The study group, comprised Govt. college Nagrota Bagwan male students aged between 18 -25 years. They were trained for one month of Yoga. Assessments of various parameters were done before and after Yoga practices, were significantly modulated, statistically by using student's test. Regular practice of yoga for one month significantly improved the R.B.C., W.B.C., Platelet count and Hb content (P<000). Conclusion:- Significant effect of the one month yoga training was found on RBC and WBC and Hemoglobin content.

Keywords :– Yoga, hematological parameters.

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 science. 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

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reaching new heights.

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Associated with a series of behavioral modifications that contribute to a healthy lifestyle, traditional yoga is a philosophy for living. 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, it's being hypothesized that some yoga exercises via vague 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.

A comprehensive and ancient holistic health system, Yoga is a physical and mental discipline that forms part of Ayurvedic medicine. Given the limited information available on the hematological and biochemical changes associated with the extended practice of Yoga, studies on hematological and biochemical modulation in regular yoga practitioners need extensive research exposure to recommend the use of yoga as a complementary therapy in those cases where the above- mentioned parameters are altered.

Procedure

The study was carried out in Govt. college Nagrota Bagwan male students. Study group comprised 10 male subjects of 18-25 years. Hematological parameters like total RBC count, total W.B.C count and hemoglobin content were determined by improved Version of automated hematology auto-analyzer. For this hemogram study, 3 ml of blood was collected in EDTA Vial under aseptic precautions.

Study group underwent yoga practices for 35 minutes twice a day in the presence of a trained yoga teacher for 4 weeks. The first observation of the study group was taken before start of yoga practice. Second observation was carried out after one month of yoga practice from the start of study. The study protocol was explained to the subjects and written consent obtained. All the volunteers were clinically examined to rule out any systemic diseases. All subjects were non-alcoholic and non-smokers. They were not taking any drugs, and they had similar dietary habits as well as physical and mental activities at work and home. They were not practicing any known stress relieving or relaxation technique previously. They carried out yogasanas, pranayama and meditation for 35 minutes, twice a day, in morning and

evening for one month, under supervision, in a prescribed manner. The schedule consisted of.

· Yogasanas- -10 minutes.

· Pranayama- -10 minutes.

· Meditation- -15 minutes.

The Asanas practiced were:- Ardhachakrasana, Tadasana, Paschimottasana, Utthita Trikonasana, Vajrasana, Salamba Sarvangasana and Halasana.

The Pranayama performed was:- Anulom Vilom

The volunteers practiced these exercises early in the morning and in evening, in a quiet, well ventilated room or in open air space sitting in a comfortable posture.

The Meditation performed was:- for 15 minute.

Collection of blood sample for Hematological Variables.

All of the subjects of study groups were asked to report at 9 am. Taking all aseptic precautions, 3 ml venous blood sample was drawn from the antecubital vein of each subject at first, before start of yoga practice, second blood sample was taken after 1 month of yoga practice from the start of study.

Statistics

The data was analyzed statistically by using statistical software SPSS. Statistical analysis of total RBC Count, total W.B.C Count and hemoglobin content/dl, were done using student' t test and $p < 0.01$ was considered as significant.

Results

Table No. 1, results showed that the values of all hematological parameters were modulated after 1 month of Yoga practice as compared to basal readings, were more significantly changed ($p < 0.000$).

The effect of 01 month of yoga in male study group

The Total RBC count/ c.mm increased from mean value 4.39 ± 0.112 to 4.87 ± 0.0324 ($p < 0.000$) statistically more significant & was due to the effects of regular practices of yoga.

The Total WBC count/ c.mm decreased from mean value 8312 ± 32.21 to 7268 ± 52.12 ($p < 0.000$) statistically more significant & was due to the effects of regular practices of yoga.

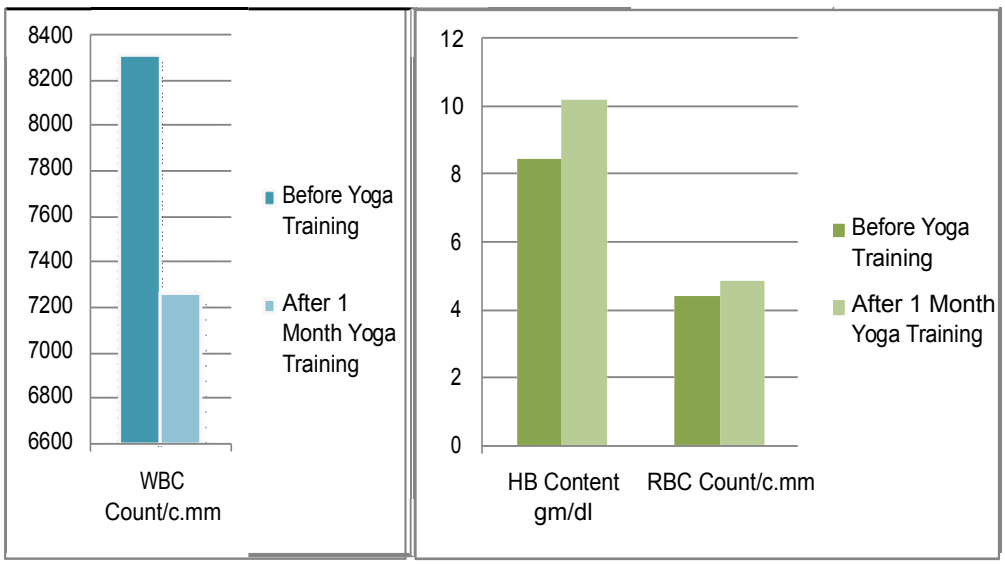
The HB content gm / dl increased from mean value 8.43 ± 0.235 to 10.2 ± 0.321 ($p < 0.000$)

statistically more significant & was due to the effects of regular practices of yoga.

Table (01): showing changes in Total RBC Count/ c.mm, Total WBC Count/ c.mm and HB content/ dl before and after one month of Yoga practices in males.

S. No.	Parameters	Before Yoga training Mean Value and S.D.	After 1 Month Yoga training Mean Value and S.D.	P Value
			4.87 ± 0.0312	
1.	Total RBC count/ c.mm	4.39 ± 0.112		P<0.000
2.	Total WBC count/ c.mm	8313 ± 32.12	7268 ± 52.21	P<0.000
3.	HB content gm/dl	8.43 ± 0.235	10.2 ± 0.321	P<0.000

Graph (01): showing changes in Total RBC Count/ c.mm, Total WBC Count/ c.mm and HB content/ dl before and after one month of Yoga practices in males



Discussion

On Analyzing the effect of Yoga on hematological parameters in normal subjects of Govt. college Nagrota Bagwan students of age between 18-25 years, in our study, total RBC Count, total W.B.C Count and hemoglobin content/dl count were studied in study group before Yoga and after one months of Yoga (Asana, Pranayama and Meditation).

The study group students showed the effect of Yoga on total RBC count which increased (<0.000), whereas total WBC count decreased (<0.000) and hemoglobin content/dl was increased (<0.000), 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 4 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. (Bal, 2015) 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 mechanisms of the body whether it is physical, physiological or psychological. Yoga Asanas significantly increase hemoglobin (Hb) content. It can be hypothesized that it is due to anti-stress and antioxidant effect of Yoga. The effect of Yoga on anemic patients was to significantly increase hemoglobin content due to increased red blood cell count that 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 spleenic contraction enhance the release of reserved RBCs. Asanas minimize all types of stress whether it is physical, physiological or psychological as revealed by decreased leukocyte count after yoga. Decline in total WBC count may be due to the concept that hypoxia induced during Yoga, increase erythroied series in bone marrow causes relative decrease in WBC count or Yoga may transited the WBC in their resting condition and decrease various cytokines which are responsible for leucopoiesis. Significant improvement in red blood cells count is due to effect of yoga. Cardioprotectant factor of yoga practice increase in hemoglobin may be justified by the anti- stress effect produced by parasympathetic dominance, packed cell volume suggested that stress-induced pro inflammatory cytokine production may stimulate the proliferation of hematopoietic cells. Yoga is being used increasingly in the medical field as a healing modality for adult patients experiencing serious illness involving alterations in the hematological profile of the patients including for those undergoing chemotherapy and radiation treatment for cancer. Documented scientific evidence strongly indicates that yoga has promotive, preventive as well as curative potential (Purshitet at 201). As a non- pharmaco therapeutic and safe modality it can be used as an effective lifestyle adjunct to medical treatment to reduce drug dosage and improve quality of life of patients. It is to be emphasized that yoga is very effective for prevention as well as management of all pervading stress and stress related disorders

(Mathenest at 1995).

Conclusion

Yoga practices hold great promise and potential in the field of medical science. Yoga therapy will definitely emerge as a major branch of medical treatment and eventually become a standard of care and practice in coming few years. India has made great progress in yogic science research as evidenced by a number of scientific and clinical papers in various journals. Although Yoga as therapy is still at the stage of clinical research, advances have been made in understanding how to use these practices for treating various diseases via correlating its biochemical, hematological spectrum. As an improvement of study design of clinical studies trying to identify disease spectrum of specific yoga activity. Increased international cooperation and pooling of the patient clinical data from different parts of the world. Standardization and further development of reliable yoga strategy for healing purposes will plan. Reinforcement of the biochemical and hematological screening focused approach in order to identify the particular yoga techniques.

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