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Changes in Hemoglobin among House Wives through Yoga: A Pilot Study

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Abstract
Hemoglobin is an essential component of blood, made up of protein that is carried by red blood cells in our body. It picks up oxygen in the lungs and delivers it to the peripheral tissues to maintain the viability of cells. Deficiency of hemoglobin may result as the silent killer in our body. A person suffering with anemia is a symptom of less hemoglobin in his body. Usually we observe the house wives with this problem at a mass level.
Practice of Yoga is to be said a useful practice to improve hemoglobin in our body. This study was conducted to assess the effect of *Yoga* on blood hemoglobin. Fifty females serving their family as house wives voluntarily came out as subject for this study. Further they divided into experimental and control groups. The experimental group was introduced with Yoga practice for fifty days. Data was analyzed by t-test. The training of Yoga revealed that there is a significant improvement in blood hemoglobin in experimental group in comparison to control.

Keywords: Asana, Pranayama, blood hemoglobin.

Introduction

Hemoglobin is a protein-based component of red blood cells which is primarily responsible for transferring oxygen from the lungs to the rest of the body. Hemoglobin is actually the reason red blood cells appear red, although oxygen-rich blood is noticeably brighter than the depleted blood returning to the heart and lungs. Fresh hemoglobin is produced in the bone marrow as needed.
The creation of hemoglobin is controlled by a complicated genetic code. Because unborn babies obtain their oxygenated blood from their mothers and not their own lungs, two separate substances called hemoglobin alpha and hemoglobin gamma combine with several nitrogen atoms and one iron atom. This allows the fetus to receive oxygen-rich blood without respiration. Once the infant is born, however, the body replaces hemoglobin gamma with a new variant called hemoglobin beta. The combination of these two substances continues for a lifetime.
Essentially, hemoglobin develops a hunger for oxygen molecules. When the blood is carried into the lungs, hemoglobin proteins containing iron atoms attract whatever oxygen is available. This oxygenated blood then travels throughout the entire bloodstream, releasing oxygen into the muscles and organs. The spent red blood cells are transferred to the gastrointestinal system for disposal and new red blood cells with hemoglobin take their place in the bloodstream.
Anemia means that the red blood cells lack sufficient levels of iron. Without an iron atom, the damaged hemoglobin pigment cannot attract oxygen in the lungs very effectively, if at all. The result can be a slow wasting process leading to complete body dysfunction. Sometimes the alpha or beta proteins produced by the genetic code are not perfectly formed, as in the case of sickle cell anemia. One of the components is shaped like a sickle, causing an imperfect bond to form.
Hemoglobin can also be compromised by blood conditions such as diabetes or

cancer. Many standard blood tests included a general check of hemoglobin levels. The amount of glucose in the bloodstream may vary from hour to hour, but an examination of hemoglobin often provides a more accurate reading for diabetics.

This attraction to other gases can actually be beneficial under controlled circumstances. Hemoglobin is also attracted to gases used during anesthesia proceedings before surgery. The nitrous oxide or other breathable anesthetic is carried into the brain through the hemoglobin, which allows the surgical team to control the patient's level of consciousness. As oxygen is reintroduced into the patient's lungs, the hemoglobin refreshes itself and the other gases become waste products.

Hemoglobin is usually measured as a part of the complete blood count (CBC) from a blood sample. Several methods exist for measuring hemoglobin, most of which are done currently by automated machines designed to perform several different tests on blood. Within the machine, the red blood cells are broken down to get the hemoglobin into a solution. The free hemoglobin is exposed to a chemical containing cyanide which binds tightly with the hemoglobin molecule to form cyanomethemoglobin. By shining a light through the solution and measuring how much light is absorbed (specifically at a wavelength of 540 nanometers), the amount of hemoglobin can be determined.

Yoga plays a greater role in the management of physical - mental health. The science of Yoga, is control of the mind. Therefore, we have to control ourselves. We begin to close our eyes, hold our nose, and become nervous and tense in our system! That is an unfortunate result that often follows from an over-enthusiasm, emotionally aroused in ourselves by hearing the very word Yoga.

Dobos, G. According to a 2005 poll from the German Institute of Demoscopy, the majority of Germans are in favor of integrative medicine, combining mainstream, complementary and mind/body medicine. The popularity of healing methods increases patient compliance, but the question is: What is the evidence and can patients with cardiovascular disease profit from integrative care? A large part of the damage to the cardiovascular system results from an increased allostatic load (McEwen), which causes increased oxidative stress, heightened inflammatory activity and platelet reactivity. There is increasing evidence that stress and lifestyle factors play an important role in the pathogenesis of cardiovascular disease through their effect on oxidative stress, cytokine activity and platelet reactivity.

Pandic, S. Ekman, I. Nord, L. Kjellgren, K. I. (2008) Device-guided breathing exercises having a significant effect in the treatment of hypertension.Sivasankaran, S. Pollard-Quintner, S. Sachdeva, R. Pugeda, J. Hoq, S. M. Zarich, S. W. (2009) observed the Effect of a Six-Week Program of Yoga and Meditation on Brachial Artery Reactivity and find a positive result as well. Marshall, D. A. Vernalis, M. N. Remaley, A. T. Walizer, E. M. Scally, J. P. Taylor, A. J. (2006) there is apositive response of exercise in modulating the impact of an ultralow-fat diet on serum lipids and apolipoproteins in patients with or at risk for coronary artery disease. Ernst, E. (2005) in his study Complementary/alternative medicine for hypertension: a mini-review, find several results which shows a significant effect of Yoga and complementary therapies to deal with the cardiac diseases.

Bhogal, R.S, Bhat, S.G, Kulkarni, D.D, & Bera, T.K (1999)- “Effect of meditation in Siva Samhita, preceded by Omkar on reaction Time and selected Biochemical & Hematological Parameters: A Pilot study”.

This practice significant reduction of RBCs and a marginal decrease in cholesterol, suggest a direct regulation of Ion channels by fatty acids in muscles activity in dependent of phosphorilation. Deshpande R.R., Bhole M.V. (1982)- "Effect of Kapalbhati on some constituents of blood". By this study result is positive. Kapalbhati influences the composition of blood in respect of RBCs count , Hb contents, TLC and Eosinophil count which indicated by increase in these values even after one minute of Kapalbhati. Govindarajula, N. Shivanandanam, G and Bera, T. K. (2004) observe the effect of Yoga training on biochemical changes in normal college students. Khare, K. V., Sanghvi, V.C. and Dr. Surana, D. C. (1989)- "Hematological biochemical and ventilatory responses to the practice of yoga in adult" .A group of 25 healthy adults who were performing yoga and age matched controls were compared in this study slowing of pulse rate , corrective improvement in hematological values , significant decrease in blood sugar with increase in plasma protein specially albumin were noted in this study.

Kumar K. (2007) Yoga Nidra can be considered as a highly effective practice for the practitioner as Yoga Nidra significantly increase the level of Hb of the student at higher classes and there is also an increase in TLC level. Thus Yoga Nidra is a complete relaxation process of body, mind and increase the immunity of a person & hence the change in the Hb and TLC are positive it can be stated that sleep is good for us but present research shows that practicing Yoga Nidra can not only help us fight off infection but lower stress level as well. Singh V K (2009) The effect of Nadishodhana on Hb with the age range 20-40 years .Pre, post data were collected before and after intervention of Nadisodhana Pranayama for 30 days by using Sahilshaemometer. It is conclude that Nadishodhan Pranayama plays positive and significant role to enhance Hb level of the subject.

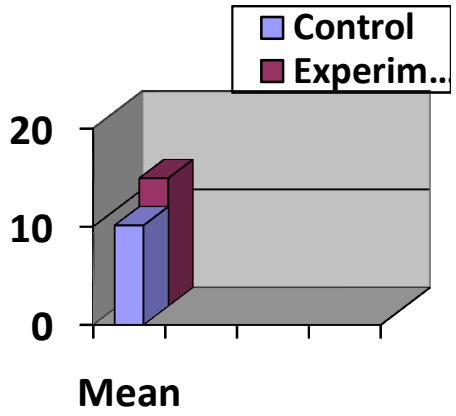
Methodology

To observe the effect of yogic intervention on the hemoglobin level, fifty females serving their family had to be selected. For that a person to person communication program was conducted to popularize the Yoga program in the semi urban area of Haridwar and Dehradun district of Uttarakhand. Fifty house wives voluntarily came out as subject for this study. Further they divided into experimental and control groups. The experimental group was introduced with Yoga. Practice of Surya-Namaskar, Nadi-shodhan Pranayama and Shavita Dhyan (Meditation) was introduced to the experimental group and practiced the Yoga for twenty minutes daily for fifty days. Hemometer is a medical instrument that was used to measure the haemoglobin content in blood in order to determine the quality of blood. After fifty days hemoglobin level was again measured of all the fifty volunteers and compared. The taken data was analyzed by t-test.

Result table: 1 showing the mean, SD, SED and t value of HB level of Experimental & control group.

	Mean	**N**	**S.D.**	**SED**	**t value**	**Level of significance**
Control	10.12	25	.48045	.11105	2.6707	0.01
Experiment	13.02	25	.3786			

df = 48, r = 0.18



Discussion:

The training of Yoga revealed that there is a significant improvement in blood hemoglobin in experimental group in comparison to control. This ongoing system of hemoglobin proteins obtaining oxygen from the lungs and delivering it to the cells is based on ideal conditions, however. Practice of Asana and Pranayama improves the circulation in our body. Hemoglobin is 200 times more attracted to carbon monoxide than oxygen, for example. This means that someone breathing in carbon monoxide from automobile exhaust could be replacing the oxygen in their lungs with a poison. If enough hemoglobin is exposed to carbon monoxide, the result could be the same as asphyxiation. Practice of Asana, Pranayama and Meditation all together has an impact on our body physiology.

Previous studies also have the similar observation. Kumar K, (2007) observed in his study a significant improvement in hemoglobin level in the Yoga nidra practitioners in comparison to the non-practitioners. Singh (2009) there is an effect of Nadisodhana pranayama on blood hemoglobin. The selected subjects in this study were of normal health and suggestion to take normal diet. It was hypothesized that there would be significant increase in hemoglobin level of subjects due to practice of nadisodhan pranayama brought change in Hb level. But it seemed that the change appeared towards upper limit of normal in which signifies a healthy physiological that the practice of N.S.P. is physiologically safe for normal people of age group under study and hence can be recommended safely for other age group to promote health. It can also be referred carefully to anemic patients as a therapeutic complement.

Conclusion:

At the end of this study it has been observed that there is an positive impact of Yogic practices on hemoglobin level of the volunteers who were regularly practicing Yoga in comparison to the non practitioner volunteers House wives.

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