

Pranayama Practice: Its effect on Haematological Variables of Male and Female Inter University Players

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Abstract

The objective of the study was to explore the effect of pranayama on Selected Haematological Variables of Male and female Inter University Players. Randomly 20 male and 20 female interuniversity players, age ranged between 22.5 ± 2.5 years, associated with different streams and sports, studying in Banaras Hindu University, Varanasi were selected for the present study. The subjects were informed about the study and the baseline assessments of study were performed before starting the pranayama (Anulom- Vilom, Ujjayi and Om recitation) session. Subjects were instructed about the pranayama session of 30 minutes per day for six day in a week for a period of two months. A Pre-test and post test of selected Haematological Variables were conducted on all the male and female participants before and after two months pranayama practicing. In practicing of Pranayama we included Suddhi kriya Jal Neti & Sutra Neti, Anulom-Vilom, Ujjayi and Om recitation thirty min in all 6 days up to 2 months for each session of the day. The obtained data were analyzed by using descriptive statistics and t-ratio. SPSS 20 version was used to analyze the data. Statistical significance was $p < 0.05$. The two months pranayama practices puts a significant effect on Haemoglobin only of female Interuniversity Players, insignificant effect was found in relation to Red Blood Corpuscles & Haematocrit. But the two months pranayama practices puts a significant effect on all the three haematological Variables i.e Red Blood Corpuscles, Haemoglobin, Haematocrit in male Interuniversity Players.

Key words: Pranayama, Red Blood Corpuscles, Haemoglobin, Haematocrit, Anulom-Vilom, Bramhari, Ujjayi.

Introduction

Where there is a health there is happiness. Here the meaning of happiness is not the pleasure out of fulfillment of the desire but the jubilant feeling all the time that is free from fears and tensions. Today, in our world, we need two items to make our lives a complete success. The first item which we lack is "vitality", which is not physical strength, but inner strength, will power, clarity of mind and the ability to perform every action, with perfection. The second item we lack is tranquility. Health is an extent of containing physical, emotional, mental and social ability to cope with one's environment.

Pranayama is derived from combining two hindi words Prana (life) + Ayama (to lengthen, prolong). Thus the literary meaning of pranayama is with the technique of lengthening the life. It should not be misconceived as breath control. Breath is the link between soul and spirit. As the metals like gold, silver etc. are purified when they are put into the fire same way all the sense organs are purified by pranayama.

Pranayama is important not only for supplying fresh air or oxygen and strengthening the lungs but they have a direct effect on the brain and emotion. Deep

breathing is very beneficial, especially Bhramari (Humming Bee Breath), Anulom vilom (Alternate Nostril Breathing), Ujjayi are all useful practices.

Meditation and Om chanting and meditation on Om can be used to nurture and heal the body and mind. We should put in efforts to remain balanced and therefore cultivate inner strength. Blood has several utility in a healthy body. One of its primary tasks is to deliver oxygen and nutrients to the body's Blood through circulation. Blood also distributes warmth to those regions that need it the most, wards off disease, and helps to filter harmful waste products such as carbon dioxide out of the body. The different components of blood each play a significant role in human body. In humans, blood Corpuscles are produced by stem Corpuscles in the bone marrow. Once these Corpuscles develop, they are released into the bloodstream. Red blood Corpuscles deliver hemoglobin, which is the iron-bearing protein that makes the transportation of oxygen possible. Hemoglobin also gives human blood, and that of many other animals, its red colour. Haematocrit refers to the proportion of volume of red blood Corpuscles relative to the total volume of blood.

The normal range of above mentioned variables are given below:

S. No	Haematological Variables	Normal Range in Males	Normal Range in Female
1.	Red Blood Corpuscles	4.5-6.3 million/ μ L	4.2-5.5 million/ μ L
2.	Haemoglobin	14-18 g/dl	12-16 g/dl
3.	Haematocrit	40-54%	37-47%

Here by conducting the present pilot study the investigator was trying to come across the outcomes of pranayama practicing for two months on the Hematological Variables i.e. Red Blood Corpuscles, Haemoglobin & Haematocrit of Male and female Interuniversity Players.

Objectives of the Study

1. To characterized the pre and post effect of two months pranayama practicing on selected haematological Variables i.e. Red Blood Corpuscles, Haemoglobin & Haematocrit of Male and female Interuniversity Players.
2. To find out whether there was any significant difference between pre and post test of two months pranayama practicing on selected haematological Variables i.e. Red Blood Corpuscles, Haemoglobin & Haematocrit on Male and female Interuniversity Players.

Research Methodology

Randomly 20 male and 20 female interuniversity players, age ranged between 22.5 ± 2.5 years, associated with different streams and sports, studying in Banaras Hindu University, Varanasi were selected for the present study. The subjects were informed about the study and the baseline assessments of study were performed before starting the pranayama (Anulom- Vilom, Ujjayi Bramhari, and Om recitation) session. Subjects were instructed about the pranayama session of 30 minutes per day for six day in a week for a period of two months.

Research Design:

Single group pre test post test design was used.

Selection of Variables

Keeping in the view about specific purpose of the study, the following Haematological variables were selected:

- (a) Red Blood Corpuscles
- (b) Haemoglobin
- (c) Haematocrit

Limitation of the study

As the subjects selected for the study from all over Uttar Pradesh, who were studying in Banaras Hindu University but the factors like dietary habits, lifestyle, and their daily routine etc. could not be controlled, which might had effect on the results of the study, considered as limitation.

Procedure Applied for Data Collection

For the collection of Pre-data and Post data, the level of Red Blood Test, Haemoglobin & Haematocrit test was performed by a reputed pathological laboratory and as per the direction & time given by the scholar. All the subjects received an explanation of nature and purpose of the study and gave their formal written consent to participate in the present study. Prior to obtain data, the subjects were asked to give completed self made questionnaire regarding their medical history, medications, which was prepared with the help of expert. Utmost care was also taken to obtain clinical based data regarding their health status to maintain research decorum. None of them were diagnosed clinically with Diabetes mellitus, Hypertension, Cardiovascular diseases or any other systemic disorders. Research scholar also made a request to all volunteers for not taking any kind of medication during study without prior information to the scholar. They were also asked not to participate in any kind of sports training during this period. The pre-data were taken just the day before starting pranayama practices and the post data were taken just the day after finishing two months pranayama practices. All the recordings were done at 08.00am to avoid any diurnal variations.

Administration of Pranayama Training Sessions

The practice was started in the morning at 6:00 am by following instructions. Initially the suddhi kriya jal neti and sutra neti kriya was done by the subjects. After doing the same the subjects were asked to sit in any comfortable meditative posture. Anuloma Viloma is an experienced form of breathing placing the practitioner into a state of meditation. If done improperly hallucination may occur. Anuloma Viloma breathing is done by placing the right thumb on the right nostril, the right ring finger on the left nostril while the right middle and index fingers rest above the nose on the forehead. First, Ujjayi inhale through the left nostril with the thumb closing the right nostril for a count of 4 seconds. Second, lower the chin closing the glottis and hold the breath for a count of 16 seconds. Finally, lift the chin opening the glottis and exhale through the right nostril; use the right ring finger to close the left nostril for a count of 8 seconds then repeat on other side .20-20 repetition was instructed them for anulom- vilom, ujjayi and Brahmri Pranayama. After those 5-10 minutes om Chanting. Continuous instruction was given while doing practice of pranayama. They were asked to avoid extra thoughts in their mind and feel comfortable while doing these practices.

Statistical Analysis

To analyze and find out significant difference between pre and post test of two months pranayama practicing on selected haematological Variables i.e. Red Blood Corpuscles, Haemoglobin & Haematocrit on female and male Interuniversity Players, descriptive statistics and paired t-test was used. SPSS 20 version was used to analyze the data. Statistical significance was $p < 0.05$.

Results & Findings

Table-I: Descriptive Statistics & Mean Comparison of Selected Haematological Variables of Female Inter University Players

Variables	Pre-Test		Post-Test		Degree of Freedom	t-value	Level of Significance
	Mean	S.D	Mean	S.D			
Red Blood Corpuscles	4.678	±0.538	4.874	±0.571	19	1.223	0.236
Haemoglobin	12.28	±1.131	13.39	±1.299	19	2.659*	0.015
Haematocrit	38.41	±3.30	38.35	±4.40	19	0.051	0.960

Significant * p value<0.05

Table no. I reveal that:

- The computed t-value of Red Blood Corpuscles was found 1.223, here p-value(0.236)>0.05 ,therefore **insignificant** difference was found between pre test and post test of two months pranayama practice on Red Blood Corpuscles of Female Interuniversity Players.
- The computed t-value of Haemoglobin was found 2.659, here p value(0.015)<0.05,therefore **significant** difference was found between pre test and post test of two months pranayama practice on Haemoglobin of Female Interuniversity Players.
- The computed t-value of Haematocrit was found 0.051,here p-value(0.236)>0.05,therefore **insignificant** difference was found between pre test and post test of two months pranayama practice on Haematocrit of Female Interuniversity Players.

Table-II: Descriptive Statistics & Mean Comparison of Selected Haematological Variables of Male Inter University Players

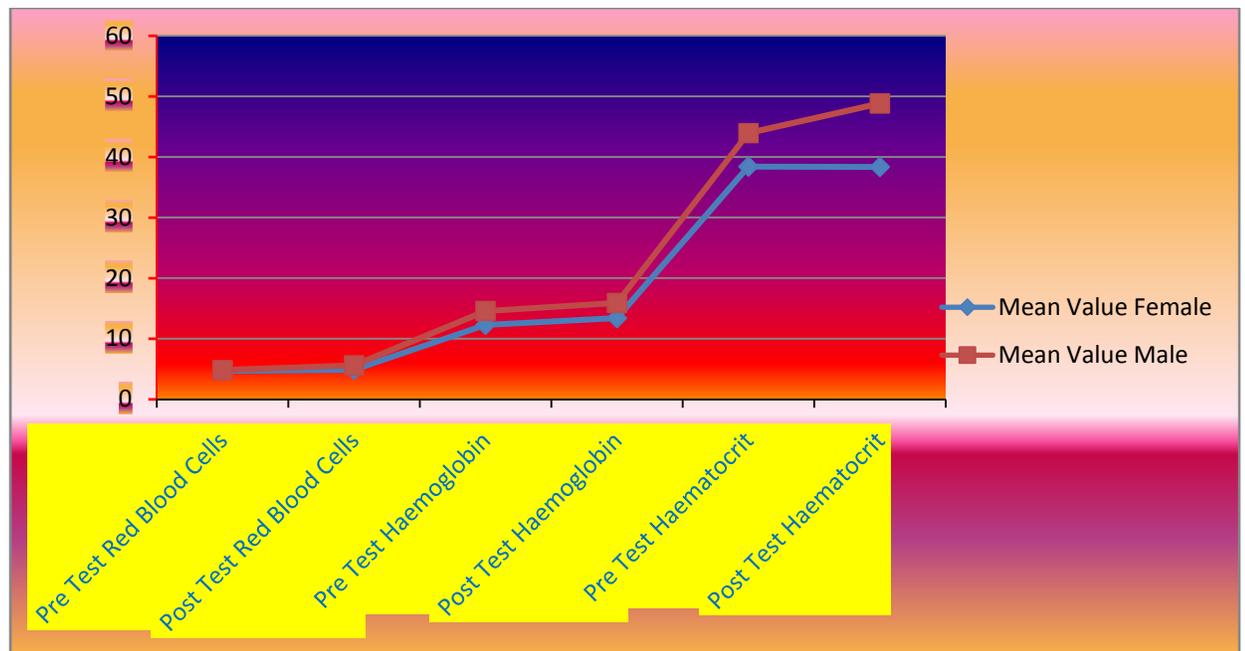
Variables	Pre-Test		Post-Test		Degree of Freedom	t-value	Level of Significance
	Mean	S.D	Mean	S.D			
Red Blood Corpuscles	4.81	±0.4602	5.5950	± 0.5296	19	4.967*	.000
Haemoglobin	14.5700	± 1.1485	15.890	± 1.5018	19	3.045*	.007
Haematocrit	43.9500	± 5.2262	48.850	± 4.5799	19	-5.064*	.000

Significant * p value<0.05

Table no. II reveals that:

- The computed t-value of Red Blood Corpuscles was found 4.967, here p-value(0.000)<0.05, therefore **significant** difference was found between pre test and post test of two months pranayama practice on Red Blood Corpuscles of Male Interuniversity Players.
- The computed t-value of Haemoglobin was found 3.045, here p value(0.007)<0.05, therefore **significant** difference was found between pre test and post test of two months pranayama practice on Haemoglobin of Male Interuniversity Players.
- The computed t-value of Haematocrit was found 5.064, here p-value(0.000)<0.05, therefore **significant** difference was found between pre test and post test of two months pranayama practice on Haematocrit of Male Interuniversity Players.

Figure No. I: Graphical Representations of Haematological Variables of Female and Male Inter University Players



Discussions of findings

What is important is that we listen to our bodies during this time. Through Pranayama practices the supply of fresh air and oxygen strengthening the lungs but they have a direct effect on the brain and emotion, meditation gives strength to soul but pranayama gives mental health, physical and physiological strength together. It keeps the brain under conscious control. It enhances well being, mood, attention, mental focus, stress tolerance and thus, can alleviate anxiety, depression, everyday stress etc. Due to the conscious control of the brain some internal chemical changes occurs in our body and gives a positive effect. That is why changes had been found in our physical and physiological variables. Through pranayama practices a sufficient amount of oxygen supplies in our body which causes the increased level of haemoglobin as proved by the present study that significant difference was found in relation to Haemoglobin in both male and female interuniversity players by taking pre and post blood test. An almost

similar type of study conducted by Bhardwaj Satish Kumar in 2012 entitled “Effect of pranayama on hemoglobin level of under graduate college- girls” also presents some supporting evidences that the practice of Pranayam elevated the level of Hemoglobin of under graduate College girls. There were some fluctuations seems in numerical value of Red Blood Corpuscles & Haematocrit after practicing two weeks pranayama but statistically insignificant difference was found in Female Interuniversity Players, but in Male Interuniversity Players Significant Difference was found. Here the question arises that if female and male inter University players are receiving similar kind of pranayama practice session so why this output has been come. This is due to the fact that because every month female loss their blood due to menstrual flow. Many researches proved that ovarian activities and hormones secretion can change the status of blood. So it is recommended if we will be more focused about the schedule of pranayama practice it can provide more significant results than the present study.

Conclusions

The two weeks pranayama practices puts a significant effect on Haemoglobin of female Interuniversity Players, but insignificant effect was found in relation to Red Blood Corpuscles & Haematocrit. But the two months pranayama practices puts a significant effect on all the three haematological Variables i.e Red Blood Corpuscles, Haemoglobin, Haematocrit in male Interuniversity Players.

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