

Effect of Surya Namaskar, Pranayama and Meditation on Selected Physiological Variables (Systolic Blood Pressure and Diastolic Blood Pressure) of State-Level Female Arm Wrestlers

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Abstract. The purpose of the present study was to examine the effect of Surya Namaskar, Pranayama, and Meditation on selected physiological variables, namely systolic blood pressure and diastolic blood pressure, of state-level female arm wrestlers. A total of 200 female arm wrestlers aged 19—25 years were selected and randomly divided into two groups: Experimental Group (E-YOG, n=100) and Control Group (C-CONTROL, n=100). The experimental group underwent a 6 months yogic training program including Surya Namaskar, Pranayama, and Meditation, while the control group continued their regular routine without yogic intervention. Pre-test and post-test measurements were taken using a sphygmomanometer. Statistical analysis using mean, standard deviation, and t-test revealed a significant reduction in both systolic and diastolic blood pressure in the experimental group. The study concluded that yogic practices are effective in regulating blood pressure and improving cardiovascular efficiency in female arm wrestlers.

keywords: Surya Namaskar, Pranayama, Meditation, Physical Fitness, Strength, Muscular Strength

I. Introduction

Arm wrestling is a high-intensity sport that requires not only muscular strength but also optimal physiological functioning. Among physiological variables, blood pressure plays a crucial role in cardiovascular health and performance. Elevated systolic and diastolic blood pressure can negatively affect athletic efficiency and recovery.

Modern training methods often overlook the role of relaxation and breathing techniques. Yogic practices such as Surya Namaskar, Pranayama, and Meditation are known to regulate autonomic nervous system activity, improve cardiovascular efficiency, and reduce stress.

Surya Namaskar involves rhythmic movements synchronized with breathing, which enhances circulation and heart function. Pranayama improves lung capacity and oxygen

supply, while meditation reduces sympathetic nervous system activity, leading to lower blood pressure.

Blood Pressure

Blood pressure is the force exerted by circulating blood against the walls of the arteries as the heart pumps blood throughout the body.

It is expressed in two measurements:

Systolic Blood Pressure: the pressure when the heart contracts (beats) Diastolic Blood Pressure: the pressure when the heart relaxes between beats

II. Method

This study will evaluate effect of Surya Namaskar Pranayama and Meditation on Systolic blood pressure and Diastolic blood pressure of state level arm Wrestlers. The practice of Yoga in this study intends To measure physiological well being. The present study was undertaken on 200 subjects to evaluate the effect of Surya Nnmaskar prnnayama and meditation on selected physiological variables of state level arm Wrestlers, aged between 19 to 25 years, from khalsa college for women of Punjab State, who were willing to participate in the program were recruited. As per the details provided above, specific conditioning exercises were administrated to both groups. The data collection was done on two stages. First pre-test and second post-test data of both groups i.e. the Experimental Group E YOG & Control Group i.e. Group C CONTROL. Training was conducted during evening session ie. 4:15 pm lo 5:15 pm, Which were suitable for them.

Tool Used

The data was collected through the standardized electronic sphygmomanometer.

III. Data Collection

Focusing nature and objectives of present study researcher approached khalsa college for women in civil line Ludhiana, Punjab and after securing permission prepared basic data for matching and group formation. Thus, two groups of 100 no. of subjects were formed. As per the derails provided above, specific conditioning exercises were administrated to both experimental groups. The data collection was done on two stages. First pre-test and second post-test data of both groups i.e. the Experimental Group E YOG & Control Group i.e. Group C CONTROL. Training was conducted during evening session ie. 4: 15 pm to 6:15 pm, and data was collected through electronic instruments and test battery on independent variables. Similarly, before starting of training, pre-test data was recorded, and final data was taken afier completion of the training program.

Statistical Techniques

The data would have been no utility unless it was analysed and interpreted by statistical techniques. Analysis of data meant studying the tabulated material in order to determine inherent facts and meanings; to fulfil the need for research problems. This practice included breaking up of complex factors into simpler parts and putting them in new arrangements for the purpose of the investigation. Statistical techniques like mean score. Standard deviation, t-ratio, paired t-test Chi square test. Fisher's exact test, etc. Have been used. Thus, pre-test and post-test data were treated for proper analysis and interpretation.

In this case, the t-test was best suited, and two samples were related. Hence, the researcher applied a paired t-test to check pre-tests data and post-test data analysis in Experimental Group E

YOG and Control Group C Control. Value of t checked at 0.05.

III. Administration of the Tests

Instrument Standardized Electronic Sphygmomanometer.

Procedure

Subjects asked to relax in a bed in upine position then instrument was placed on the right hand of the subject. An inflatable nibber bag (cut) connected to the standardized electronic sphygmomanometer and click the button. After a few minutes the reading of Systolic blood pressure and Diastolic blood pressure appears on the screen and of the sphygmomanometer and recorded all about data of the various variables individual accordingly

IV. Data Analysis & Results of the study

Pre-test findings

Systolic Blood pressure (SBP):

Table 1: Systolic Blood pressure (SBP) of players in both groups during pre-test

Group	Mean	Std. deviation	Mean difference	t-value	p-value
Experiment	124.46	4.92	0.200	0.242	0.809 ^{Ns}
Non Experiment	124.26	6.65			

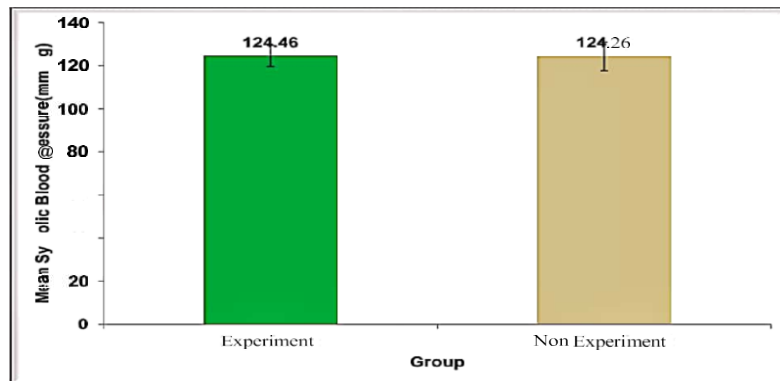


Figure 1: Mean Systolic Blood pressure (SBP) of players during pre-test

Table 2: Systolic Blood pressure (SBP) of players in both groups during post test

Group	Mean	Std. deviation	Mean difference	t-value	p value
Experiment	119.11	1.65	5.420	10.455	0.001
Non Experiment	124.53	4.91			

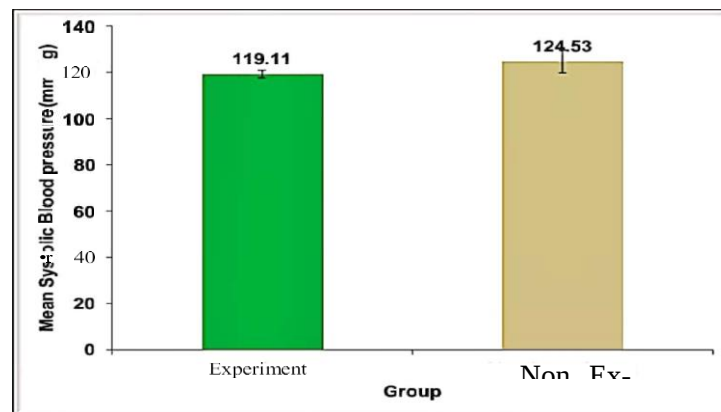


Figure 2: Mean Systolic Blood pressure (SBP) of players during post test

Table 3: Change in Systolic Blood pressure (SBP) of players in both groups

Group	Test	Mean	Std. deviation	Mean difference	t-value	p-value
Experiment	Pre-test	124.46	4.92	5.350	10.705	0.001'
	Post-test	119.11	1.65			
Non Experiment	Pre-test	124.26	6.65	0.270	0.434	0.665 ^{Ns}
	Post-test	124.53	4.91			

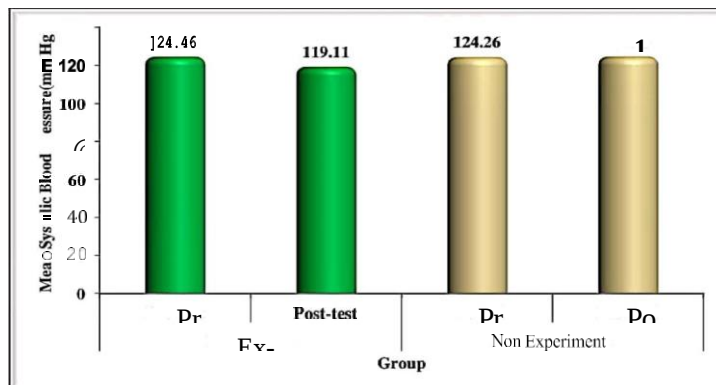


Figure 3: Change in mean Systolic Blood pressure (SBP) of players in each group

4. Diastolic Blood pressure (DBP)

Table 4: Diastolic Blood pressure(DBP) of players in both groups during pre-test

Group	Mean	Std. deviation	Mean difference	t-value	p-value
Experiment	88.04	5.81	0.070	0.081	0.536 ^{Ns}
Non Experiment	87.97	6.42			

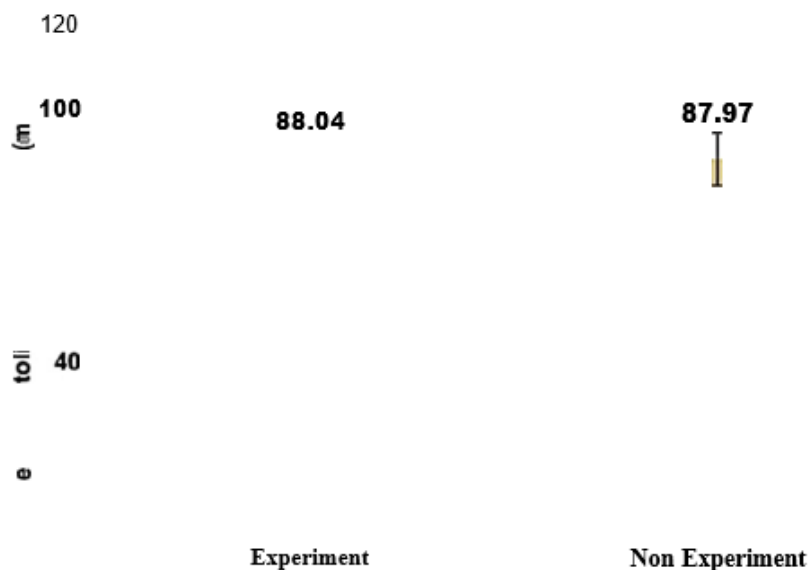


Figure 4: Mean Diastolic Blood pressure(DBP) of players during pre test

Non Experiment

Table 5: Diastolic Blood pressure(DBP) of players in both groups during post-test

Group	Mean	Std. deviation	Mean difference	t-value	p value
Experiment	79.82	0.96	7.750	11.897	0.001
Non Experiment	87.57	6.44			

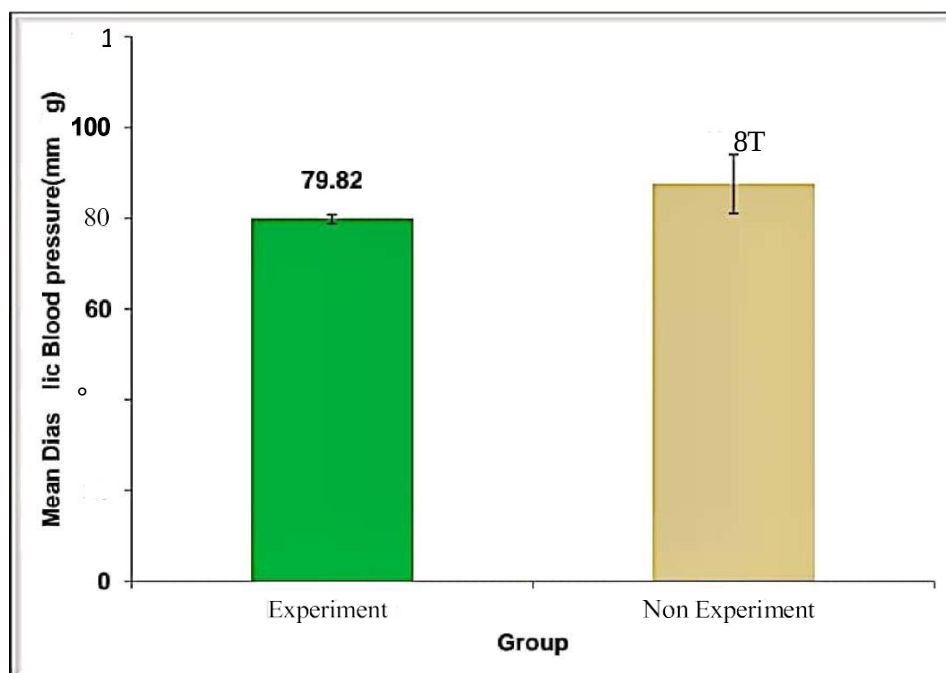


Figure 5: Mean Diastolic Blood pressure(DBP) of players during post-test

Tobie 6: Change in Diastolic Blood pressure (DBP) of players in both groups during post-test

Group	Test	Mean	Std. deviation	Mean difference	t-value	p-value
Experiment	Pre-test	88.04	5.81	8.220	13.942	0.001*
	Post-test	79.82	0.96			
Non Experiment	Pre-test	87.97	6.42	0.400	1.459	0.148 ^s
	Post-test	87.57	6.44			

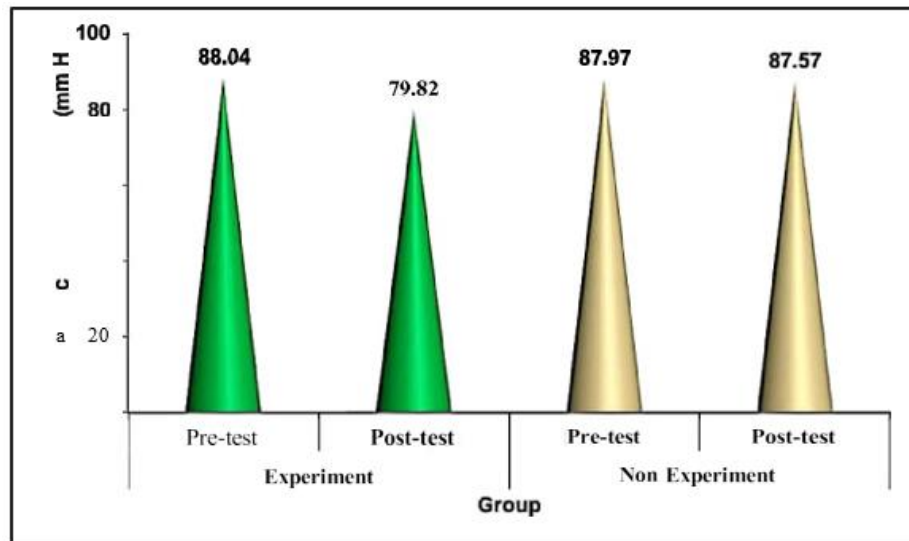


Figure 6: Change in mean Diastolic Blood pressure (DBP) of players in each group

V. Discussion

Pre—Test Results:

- From the Table 1, it is clear that there is no significant difference ($p > 0.05$) between Systolic Blood Pressure of Experimental Group E YOG & Control Group C Control.
- The results in Table no. 4 showed that there is no significant difference ($p > 0.05$) in Diastolic Blood Pressure between Experimental Group E YOG and Control Group C Control.

Post-Test Results:

- From the Table 2, it is concluded that there is highly significant difference ($p < 0.001$) in Systolic Blood Pressure among Experimental Group E YOG and Control Group C Control.
- The result shown in Table 5, is that there is significant difference ($p < 0.001$) in Diastolic Blood Pressure among Experimental Group E YOG and Control Group C Control.

Impact of training:

- From the Table 3, it can be concluded that the mean comparison between pre-test and post-test in Systolic Blood Pressure is highly significant ($p < 0.05$) in case of Experimental Group E YOG but on the other hand Non-significant ($p > 0.05$) for Control Group C Control.

- From the Table 6, it can be concluded that the mean comparison between pre-test and post-test in Diastolic Blood Pressure is highly significant ($p < 0.05$) in case of Experimental Group E YOG but on the other hand Non-significant ($p > 0.05$) for Control Group C Control.

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