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The effect of surya namaskara on flexibility of school level athletes

Dileep Kumar Chaudhary and KN Singh

Abstract

Surya Namaskara a popular traditional Indian yogic practice. It is derived from Sanskrit name Surya and Namaskara which means sun salutations. It includes practice of twelve physical postures involving alternate backward bending and forward bending postures. This paper is related to the effect of Surya Namaskara on flexibility of school level athletes. This study was undertaken with the objective to find out the effect of Surya Namaskara on flexibility of school level athletes. The subjects were taken from different school of Varanasi. To achieve the objective of the study, the selected subjects were divided into two groups randomly i.e. control group and experimental group. Experimental group underwent Surya Namaskara practices for a period eight weeks, five days and control group did not participate in any special training other than the regular routine. In this study Surya Namaskara training session was eight weeks, five days used as an intervention. The study was conducted using the groups' pre-test, post-test design. The finding of this study revealed that the Surya Namaskara was effective on flexibility of school level athletes. This paper is highlighting that, there was a significant improvement takes place on flexibility of school level athletes and also there was a significant difference exists between experimental and control groups on flexibility.

Keywords: Surya Namaskara, flexibility, school level athletes

Introduction

Surya Namaskara or sun salutation is a traditional Indian yogic technique for expressing gratitude to the Sun. it is derived from the Sanskrit name Surya here refers to the sun and Namaskara means salutations. The sun symbolizes spiritual consciousness and in ancient times was worshipped on a daily basis so it is done preferably in the morning while facing the rising sun. It includes set of twelve physical postures involving alternate backward bending and forward bending postures along with regulated breathing and relaxation. It helps to reduce stiffness, revitalizes the body, refreshes the mind and purifies restrained energy channels (cited in Chutia, changmai, Thapa and Gogoi, 2016) ^[1]. Surya Namaskara is itself complete yogic practice because it benefited at all levels (physical level, physiological level and also psychological level) of an individual (cited in Sisodia and Singh, 2014) ^[8]. Practice of Surya Namaskara is one of the best ways to improve flexibility. There are lots of study are to be done to see the effect of Surya Namaskara on physical and physiological variables. Surya Namaskara is one yogi practice that has been found to influence flexibility in a positive direction.

Flexibility is an integral component of physical conditioning of Surya Namaskara. Regular training of Surya Namaskara helps to increase the ability of muscles to extend without any damage. Flexibility is the ability to move the body joints through a maximum range of motion without strain (cited in Sisodia, 2017) ^[9]. According to Mandelbaum (1978), flexibility is the ability to respond effectively to change circumstances. on the basis of this definition flexibility is related to two kinds of change first there are changing circumstances second there is a response to these changing circumstances which involves a change in some state or activity (cited in Jonsson, 2007) ^[3]. The flexibility word is derived from the Latin word flectere or flexibilis which mean to bend and is defined as the "ability to be bent". Flexibility is an essential component of health related fitness and the lack of flexibility create lots of functional problem or disorder. Lack of flexibility can be responsible for bad posture, compression of peripheral nerves, back pain and many more and if an individual with good flexibility have

great ease movements, less chance of injury during movements. (Miller, 2006)

Research questions

The following research question was therefore, posited for this study:

Does Surya Namaskara effective for improving flexibility of school level athletes?

Objective of the study

To find out the effect of Surya Namaskara on flexibility of school level athletes.

Hypothesis of the study

H₁-There is significant effect of Surya Namaskara on flexibility of school level athletes.

Null Hypothesis of the study

H₀1- There is no significant effect of Surya Namaskara on flexibility of school level athletes.

Delimitations

1. The study was delimited to only one physiological variable such as flexibility.
2. The study was conducted on only 140 male and female school level athletes, who were regularly participating in games and sports.

Methodology of the study

Experimental designs method was used in the present study. The study was conducted by using the group pre-test and post-test design. Four groups were created, two experimental group and two control group. 35 school level athletes were in each group. Experimental group underwent Surya Namaskara practices for a period eight weeks, five days and control group did not participate in any special training other than the regular routine. Flexibility was measured by sit and reach test

before (pre-test) and after (post-test) the treatment of all four groups.

Selection of Subject

For the purpose of the study 140(male and female) school level athletes were selected from various schools. Subjects were divided randomly in four groups respectively; experimental group (male), control group (male) and experimental group (female), control group (female).

Selection of Variables

To accomplish the purpose of the present study following variables were selected as independent and dependent variable respectively; Surya Namaskara and flexibility.

Criterion Measures

Flexibility was measured by sit and reach test and recorded in Centimeter.

Procedure of data collection

Prior to the administration of the experiment, different school administration was contacted and permission was taken to conduct the experiment. The entire experiment consisted of three phases: pre- treatment phase (flexibility was measured by sit and reach test), treatment (Surya Namaskara training session was given eight weeks, five days) and post- treatment phase (flexibility was measured by sit and reach test).

Data analysis and interpretation

For data analysis and drawing the meaningful inferences related to objective of the present study, the statistical techniques mean, standard deviation and Analysis of covariance (ANCOVA) were used. For interpretation of results level were set at 0.05 level.

Part A- Distribution of the Data

Table 1: Distribution of Sample according to group

Group	Number of students
Experimental (Male)	35
Control (Male)	35
Experimental (Female)	35
Control (Female)	35
Total	140

Part – B Statistical Analysis of Data

This section deals with the analysis and interpretation of data

collected using research tools of the study. Mean & standard deviation values were computed to analyse the data.

Table 2: Mean pre-test, post-test scores of Experimental and Control groups and ANCOVA in respect to flexibility of students. N=140

Groups	Pre-test	Post-test	Source of variance	Df	SSx	SSy	SSyx	MSSy.x	Fy.x
Experimental	35.32	37.57	Among	3	65.40	266.14	222.16	74.05	40.7
Control	35.75	35.54	Within	135	2025.22	1836.4	245.57	1.819	

Where-

Df- Degree of freedom,

SSy- Sum of squares for y,

MSSyx – Mean square variance

SSx- Sum of squares for x

SSxy- Adjusted sum of squares

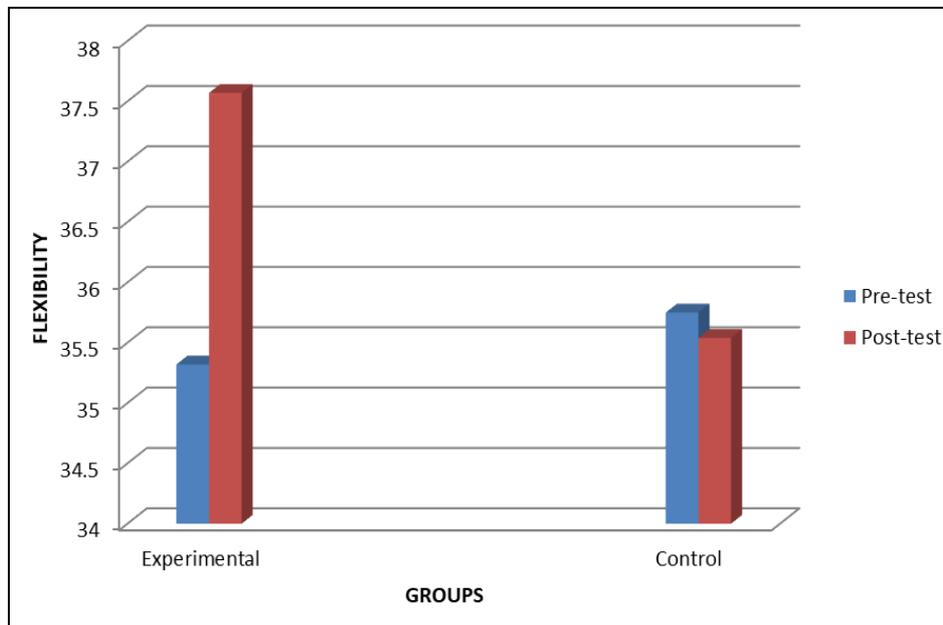


Fig 1: Graphical representation of Mean Flexibility (pre and post- test) of experimental and control group

Result and Discussion

The objective of the study was to find out the effect of Surya Namaskara on flexibility of school level athletes. From the table 2, it is clear that calculated value 40.7 is much greater than the table value 2.66 at 0.05 levels. Therefore, this obtained value is significant at 0.05 levels and thus H_0 is rejected and corresponding hypothesis is accepted and it may be said that there is significant difference between mean scores of the pre-test and post-test. The study also showed that there was a significant difference in improving flexibility of the students. The result of study also indicated that experimental group had significantly improved the performance of sit and reach flexibility when compared to control group. It also indicated that there was significant difference exists between the pre-test and post-test means of experimental and control group on sit and reach flexibility. The result of this study is supported by other research findings. Sethu (2016) [5] determined that Surya Namaskara practices for a period of six weeks of five days per week was significant in improvement of ankle and wrist flexibility and also concluded that there was a significant difference exists between experimental and control groups on ankle and wrist flexibility. Singh (2016) [7] reported significant difference between pre and post-test flexibility of Cricket players ($t=6.713$, $p<0.05$) and also concluded that Surya Namaskara training may be effective for the improvement of flexibility of Cricket players. Deshmukh, Chincholkar, Sutar and Ghodey (2018) [2] studied the effects between Pilates and Surya Namaskara on flexibility in women having sedentary lifestyle using Sit and Reach test and Shoulder and Wrist test and found significant difference in flexibility in pre and post values in Pilates and Surya Namaskara, but when comparison was made between two groups Surya Namaskara training is effective to observe improvising flexibility in sedentary females.

Conclusion of the study

On the basis of findings of the results of the study indicate that there was a significant improvement found in flexibility due to regular practice of Surya Namaskara in experimental groups. It can be concluded that the Surya Namaskara has been effective for school level athletes in improving

flexibility and practices of Surya Namaskara help to improve strength of leg muscles or muscles groups of athletes.

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