Effect of suryanamaskar on flexibility of middle elementary school students

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Abstract
The purpose of the study was to find out the effect of 6-weeks suryanamaskar on flexibility of middle elementary school students. The study was based on sample of 30 middle elementary school students of Kerekoni adarsh high School from Dhemaji district of assam, N=15 for experimental group and N=15 control group. The age of the subjects was ranging from 11-14 years. The variables selected for the present study were Suryanamaskar training (independent variable) and flexibility (dependent variables). Double Groups pre and post test Design was employed. The flexibility data was collected by administering Sit and Reach test. Pre-test was conducted before starting the training and post-test was conducted after 6-weeks Suryanamaskar training. In order to find out the effect of Suryanamaskar on flexibility analysis of covariance test was employed. The result showed that there was a significant difference between Experimental group and Control group after 6-week Suryanamaskar training on flexibility as the calculated F-value (18.59) was quite more than tabulated F-value (4.21).

Keywords: Suryanamaskar, Flexibility

1. Introduction
Suryanamaskar is an ancient Indian method of offering prayers to the rising Sun in the morning along with a series of physical postures with regulated breathing aiming at range of physical, mental and spiritual benefits (parag). Suryanamaskar is a graceful combined sequence of twelve postures along with regulated breathing and relaxation. It helps to relieve stiffness, revitalizes the body, refreshes the mind and purifies subtle energy channels. There are number of study have been conducted on Suryanamaskar and found significant improvement in flexibility. Flexibility is the capacity of muscle to extend without any damage. The word flexibility is derived from the Latin word flectere or flexibilis which mean to bend and is defined as the “ability to be bent, pliable.” (Science of flexibility). Flexibility is the one of the most important component of physical fitness. Practice of asana in one of the best way to improve flexibility. There are plenty of study are to be done to see the effect of yogic asanas on flexibility and Suryanamaskar is itself combination of six asanas.

Purpose of the Study
The main purpose of the study was to determine the effect of 6-week Surya Namaskar practice on flexibility of middle elementary school students of Kerekoni Adarsh high School from Dhemaji district of Assam.

Methodology
For the purpose of this study total thirty male students (N=15 experimental group and N=15 control group) were selected as subjects from Middle Elementary School Students of Kerekoni Adarsh high School from Dhemaji district of Assam., The age of the subjects was ranging from 11-14 years. The experimental group was given 6 weeks Suryanamaskar training on flexibility and control group was not given treatment.
Selection of Variables:
1. Independent variable: Flexibility
2. Dependent variable: Suryanamaskar

Criteria of measures:
Flexibility was measured by sit and reach test and recorded in centimeter

Training Protocol
The training protocol includes 5 days/week; each session of 40-minute. Pace of Surya Namaskar was 2 minutes for each round. It means around 10 seconds was taken each step.

Results and Discussions
To find out the significant effect of Surya Namaskar practice on flexibility of middle elementary school students of Kerekoni Adarsh high School from Dhemaji district of Assam. The analysis of covariance was used and has shown in the table below-

<table>
<thead>
<tr>
<th>Test</th>
<th>Experimental Group</th>
<th>Control Group</th>
<th>Source of Variance</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test Mean</td>
<td>9.93</td>
<td>12.53</td>
<td>B 1</td>
<td>1</td>
<td>50.7</td>
<td>50.7</td>
<td>2.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W 28</td>
<td>28</td>
<td>608.67</td>
<td>21.74</td>
<td></td>
</tr>
<tr>
<td>Post-test Mean</td>
<td>13.53</td>
<td>12.6</td>
<td>B 1</td>
<td>1</td>
<td>6.54</td>
<td>6.54</td>
<td>0.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W 28</td>
<td>28</td>
<td>631.33</td>
<td>22.55</td>
<td></td>
</tr>
<tr>
<td>Adjusted Post-test Mean</td>
<td>26.13</td>
<td>11.34</td>
<td>B 1</td>
<td>1</td>
<td>26.13</td>
<td>41.26</td>
<td>18.59*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W 27</td>
<td>27</td>
<td>11.34</td>
<td>2.22</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 0.05 level of confidence

It is evident from the above table that there is significant effect of suryanamaskar on flexibility as the ‘F’-value of adjusted post-test of 18.59 was numerically quite more than that of tabulated F-value of 4.21 at 0.05 level of confidence.

Analysis of covariance of flexibility has been graphically depicted in Figure below-

![Diagram](image)

Fig 1

F-ratio of the Pre-test Means, Post-test Means and Adjusted Post-test Means on Flexibility

Discussion of Findings
The finding of statistical analysis reveals that there is significant improvement in flexibility of the selected experimental group due to 6-week surya namaskar practice. It may be attributed to the fact that during Surya Namaskar practice, it requires to stretch different parts of the body which make muscle or joint relax and flexible. This study is also supported by Singh Kanwaljeet et al. (2010) [4] who conducted an experimental study entitled “the effect of suryanamaskar yogasana on muscular endurance and flexibility among intercollege yoginis” which indicated that muscular endurance and flexibility significantly improved after six week suryanamaskar yogasana. Choudhary R, Krzytof Stec (2010) [1] also conducted an experimental study entitled “The Effects of Dynamic Suryanamaskar on Flexibility of University Students” which also indicated that flexibility significantly improved after six week Dynamic Suryanamaskar. From the various studies and findings it is confirmed that flexibility significantly improved after Surya namaskar training.

Conclusion
Considering the limitations of the study and on the basis of statistical finding it is concluded that there is significant improvement on flexibility after six week suryanamaskar training on middle elementary school students of Kerekoni Adarsh high School from Dhemaji district of Assam.

References