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Effect of yoga training on coordinative abilities of high school students

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Abstract

The purpose of the study was to determine Effect of Yoga Training on Coordinative abilities of High School Students. The variables selected for the study was Eye Hand Coordination, Static Balance, Dynamic Balance and Reaction Time. The subjects of this study were 40 boys between the age group of 13-15 years from GHSS Morazha, Kannur district. The subject were randomly assigned to an experimental group (N=20) and control group (n=20).The experimental group participated in Yoga training program three days in a week Monday, Wednesday and Friday for a period of six weeks. The control group did not participate in any sort of Yoga training program during the same period. All the subjects were tested on the coordinative abilities such as Eye Hand Coordination, Static Balance, Dynamic Balance and Reaction Time before and after the Yoga training program. Eye Hand Coordination was recorded as the number of catches taken by the ball in 30 seconds of time. Static balance was measured by stork stand test recorded in seconds. Dynamic Balance was measured by Modified Bass test of dynamic balance recorded in seconds. Descriptive statistics and dependent 't' test used to compare the difference in the pre and post-test means of the Yoga Group and Control Group. The level of significance chosen was 0.05 levels. In experimental group, significant changes were seen in Eye Hand Coordination, Static Balance, Dynamic Balance and Reaction Time. In the case of control group there were no changes or decrease found in coordinative abilities for the same period.

Keywords: yoga training, coordinative abilities, high school students

Introduction

Developing coordinative abilities influences learning and perfecting new motor acts and their stability over time, promotes an efficient execution of motor acts and actions, in various conditions, supports better use of the other conditional abilities, encourages restructuring movements in high performance training phases and improving basic and applied motor skills (Neluta Smidu, 2014).

Yoga has been acclaimed as one of the scientific mind-body training programme which helps to improve the coordinative abilities besides keeping the body physically, physiologically and mentally healthy. Yoga practice has been found effective in reduction in visual and auditory Reaction Times (Madanmohan, 1992). Yoga practice also helps to improve memory power (Singh, 1977). Yoga training affects the static and dynamic balance positively (Rasmi Muammer, 2015).

Methodology

Selection of subjects

Forty (n=40) male students were randomly selected from GHSS Morazha in the age range of 13 to 15 years. The selected subjects were randomly assigned to two equal groups of thirty (n=20) each. The experimental group participated in Yoga training program three days in a week Monday, Wednesday and Friday for a period of six weeks. The control group did not participate in any sort of Yoga training program during the same period

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Table 1: Selection of variables and tests

| Sl. No | Variables | Tests |
|--------|------------------------|---------------------------------------|
| 1 | Eye Hand Co-ordination | Alternate Hand Wall Toss Test |
| 2 | Static balance | Stork stand |
| 3 | Dynamic balance | Modified Bass test of dynamic balance |
| 4 | Reaction time | The Nelson hand reaction test |

Analysis of data and results of the study

All the subjects of the two groups were tested on selected coordinative abilities: Eye-Hand coordination, Static balance, Dynamic balance and Reaction time. Before and after the training programme, the level of significant chosen was 0.05 level confidence throughout the study. The effect of yoga programme on high school students were determined by statistically analysing the data by applying descriptive statistics, dependent t-test. The data and interpretations are discussed below.

Table 2: Descriptive statistics of the total sample of subject

| | Mean | Std. Deviation |
|--------------------|-------|----------------|
| Eye Hand Co. PRE | 15.8 | 3.47 |
| Eye Hand Co. POST | 16.25 | 3.56 |
| Static Bal. PRE | 4.65 | 2.76 |
| Static Bal. POST | 5.33 | 2.56 |
| Dynamic Bal. PRE | 73.18 | 7.04 |
| Dynamic Bal. POST | 74.03 | 7.17 |
| Reaction Time PRE | 20.25 | 3.51 |
| Reaction Time POST | 19.25 | 3.04 |

Table 3: Descriptive statistics of the experimental group

| | Mean | Std. Deviation |
|--------------------|-------|----------------|
| Eye Hand Co. PRE | 16.15 | 4.02 |
| Eye Hand Co. POST | 17.15 | 3.84 |
| Static Bal. PRE | 3.65 | 2.03 |
| Static Bal. POST | 4.95 | 2.14 |
| Dynamic Bal. PRE | 74.85 | 6.26 |
| Dynamic Bal. POST | 76.7 | 5.89 |
| Reaction Time PRE | 20.75 | 3.78 |
| Reaction Time POST | 18.85 | 2.89 |

Table 4: Descriptive statistics of the control group

| | Mean | Std. Deviation |
|--------------------|-------|----------------|
| Eye Hand Co. PRE | 15.45 | 2.87 |
| Eye Hand Co. POST | 15.35 | 3.08 |
| Static Bal. PRE | 5.65 | 3.07 |
| Static Bal. POST | 5.7 | 2.92 |
| Dynamic Bal. PRE | 71.5 | 7.52 |
| Dynamic Bal. POST | 71.35 | 7.48 |
| Reaction Time PRE | 19.75 | 3.24 |
| Reaction Time POST | 19.65 | 3.20 |

Table 5: Mean comparison of experimental and control group on eye hand coordination

| Control Factors | Pre Test | | | Post Test | | | t-ratio |
|-----------------|----------|-------|------|-----------|-------|------|---------|
| | N | Mean | SD | N | Mean | SD | |
| Experimental | 20 | 16.15 | 4.02 | 20 | 17.15 | 3.84 | 4.156* |
| Control | 20 | 15.45 | 2.87 | 20 | 15.35 | 3.08 | .698 |

$t_{0.05}(1, 19) = 2.093^*$ significant at t.05 level

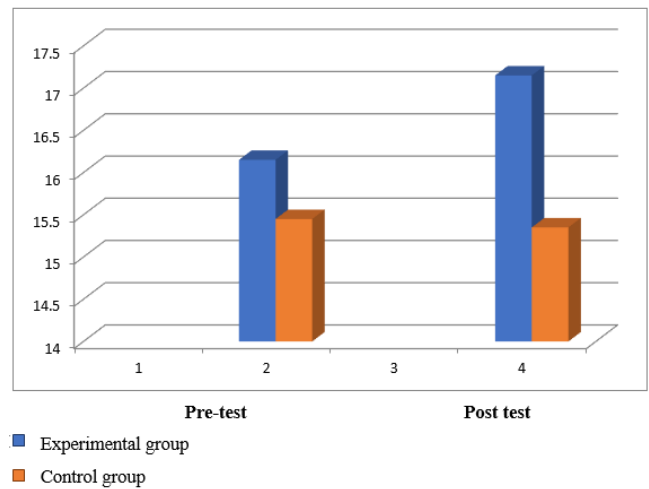


Fig 1: Illustration of mean scores on Eye Hand Coordination

Table 6: Mean comparison of experimental and control group on static balance

| Control factors | Pre Test | | | Post Test | | | t-ratio |
|-----------------|----------|------|------|-----------|------|------|---------|
| | N | Mean | SD | N | Mean | SD | |
| Experimental | 20 | 3.65 | 2.03 | 20 | 4.95 | 2.14 | 5.940* |
| Control | 20 | 5.65 | 3.07 | 20 | 5.7 | 2.92 | .326 |

$t_{0.05}(1, 19) = 2.093^*$ significant at t.05 level

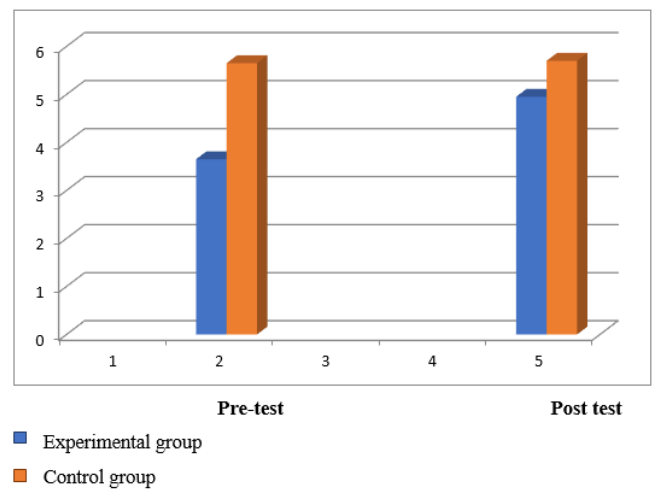


Fig 2: Illustration of mean scores on Static Balance

Table 7: Mean comparison of experimental and control group on dynamic balance

| Control factors | Pre Test | | | Post Test | | | t-ratio |
|-----------------|----------|-------|------|-----------|-------|------|---------|
| | N | Mean | SD | N | Mean | SD | |
| Experimental | 20 | 74.85 | 6.26 | 20 | 76.7 | 5.89 | 4.883* |
| Control | 20 | 71.5 | 7.52 | 20 | 71.35 | 7.48 | .645 |

$t_{0.05}(1, 19) = 2.093^*$ significant at t.05 level

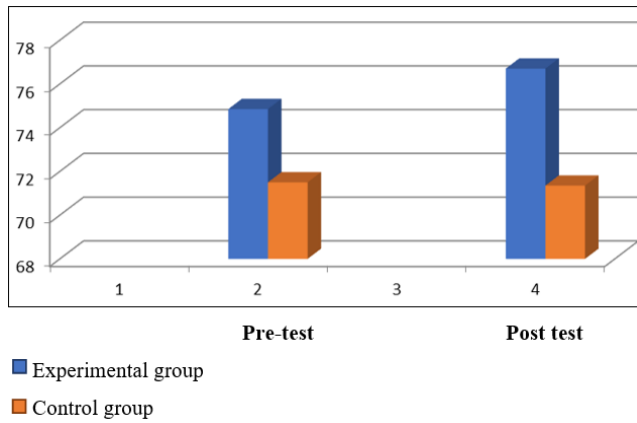


Fig 3: Illustration of mean scores on dynamic balance

Table 8: Mean comparison of experimental and control group on reaction time

| Control factors | Pre Test | | | Post Test | | | t-ratio |
|-----------------|----------|-------|------|-----------|-------|------|---------|
| | N | Mean | SD | N | Mean | SD | |
| Experimental | 20 | 20.75 | 3.78 | 20 | 18.85 | 2.89 | 6.190* |
| Control | 20 | 19.75 | 3.24 | 20 | 19.65 | 3.20 | .623 |

$t_{0.05}(1, 19) = 2.093^*$ significant at t.05 level

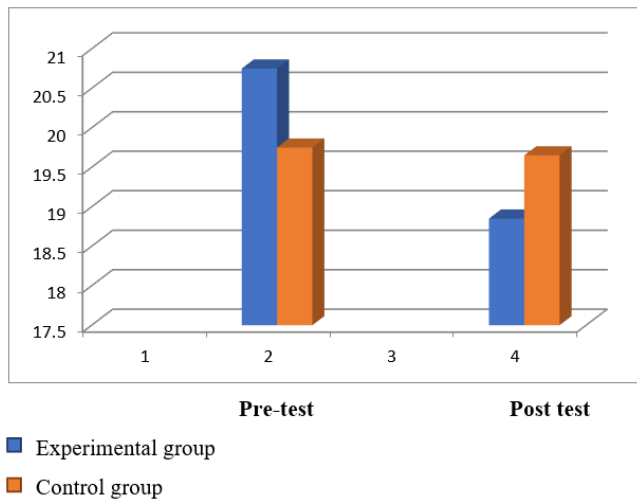


Fig 4: Illustration of mean scores on reaction time

Discussion of findings

All the subjects of the experimental groups underwent 6 weeks of yoga training for forty five minutes for a day. The result of the study indicates that the selected yoga programme had brought significant improvement on selected coordinative abilities (Eye Hand coordination, Static Balance, Dynamic Balance, and Reaction Time) of high school students. However control group did not show any improvement on selected variables as they were not involved in any type of training programme except their daily routine.

The synchronised movement with breath in asanas and pranayamas possibly made the smooth function of central nervous system and helped to improve the muscle tone thereby improving the neuromuscular coordination, which resulted in improving the eye hand coordination, reaction time. The results of the study are in conformity with the findings of Telles (2006), Sunita & Jay (2014), Sunita & Jay (2014), Madanmohan (1992) and Bhavanani (2003) who concluded that Yoga training had positively influenced the scores of eye hand coordination and reaction time.

The balancing asanas especially Gaurdasana possibly influenced the vestibular system which is responsible to keep

physical balance and might have increased the sense of both static and dynamic balance. The result of the study support the studies conducted by Ali *et al.* (2014), Hart (2008) who concluded that daily Yoga is effective in improving balance in those who practices yoga regularly.

Conclusions

1. The Yoga training group was better in improving the coordinative abilities namely Eye Hand Coordination, Static Balance, Dynamic Balance and Reaction Time as compared to Control Group (CG).
2. The present study revealed that regular practice of Yoga would help the students to improve coordinative abilities.
3. An integrated yoga training programme may be incorporated as a supplementary exercises with the conventional physical exercises to achieve overall fitness.

This study may help full for following ways

Yoga may be included in the school curriculum, Similar study may be undertaken with female high school students, Similar study may conduct taking larger samples than those used in the present study and Similar study may be undertaken with all age groups.

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