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# Effect of Specific Yogic Exercises on Motor Fitness Variables of Senior Secondary School Students

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Abstract:in present study which is "effect of specific yogic exercises on motor fitness variables of senior secondary school students", the effect of yogic exercise on students of age group of 14 – 17 year was evaluated. Total 72 student were participated in this study where 36 students were treated as control group those were untreated student and no yogic training was imparted to this group. Remaining 36 students grouped as experimental group those were subjected to training on yogic exercise for motor fitness variables were targeted for eight weeks duration. The training regime was consisting of combination of asana and pranayama. The motor fitness variables assigned to improve were Lower abdominal strength, Agility, Flexibility, Power of leg, Speed andEndurance (Aerobic Fitness).Thepaired samples t-test was applied to assess the significance of difference among the pretest andposttest training result. After analyzing the results of the study,it was concluded that there was significant difference exist on allfitness variables.

**Keywords:** Yoga, Motor, Fitness

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## Introduction

When we study the Indian tradition, we understand the yoga principles had been the foundation for Indian culture. The word 'Yoga' itself comes from a Sanskrit word meaning 'yoke' or 'union'. It conveys the idea of harnessing oneself to a discipline and at the same time of unifying the parts of the self, body, mind and spirit. Yoga has a complete message for humanity. It has a message for the human body. It has a message for the human mind and it has also a message for the human soul. Yoga is a very ancient discipline. It is recognized as one of the most important and valuable gifts of the Indian heritage.Today the world is looking to yoga for solving the various problems men are facing. French scholar, Masson Ural, has described yoga as the permanent basis of Indian culture. Hence it has its varieties and diversions as it has its right and discipline, the different kinds of yoga has played a vital role in forming the spirit of modern India.

The science of posture and training the body by means of the asanas is Hatha yoga. The techniques of meditation of observing and making the mind still became known eventually as Raja Yoga ('Raja' means 'King'). Karma yoga is the yoga of action and can be applied to the way we perform everything in our daily life. Gyana Yoga is the yoga of knowledge and of the intellect. Bhakti yoga is the devotional path to union. The main paths of yoga, its philosophy and its relevance tour everyday life, are described in the Bhagvad-Gita, written in the sixth century B.C. In India, Yogic exercises were being practiced since thousands of years. It refers the union of body and mind.

Patanjalibeing an important yoga guru, the practice of yoga has also been made systematic by the exponent of the system. Patanjali discusses the nature of enlightenment, the means of attaining it, the obstacles and the problems of practice and ways of overcoming them. Patanjali lists the eight 'limbs' of stages of yoga, an eight-fold path: namely abstention (Yama) regulations discipline, (Niyama) easy posture (Asana), control of breathing (Pranayama), sense of control (Pratyahara) concentration (Dharana), meditation (Dhyana)and super conscious state (Samadhi). Yama and Niyama for the foundation of study and posture and breath control are mastered before meditation. But the more one progresses the more one realizes that the development of the limbs cannot be separated.

**Bharathapriya and Gopinath (2011)**, studied the effect of yogic practice on flexibility among school boys. Forty subjects were selected from A.R.R Matriculation higher secondary school and their age ranged from 15 to17 years. The subjects were divided into control and the experimental group. The experimental group underwent selected asanas and pranayama for five days per week for twelve weeks. Control group did not undergo any training program rather than their routine work. Flexibility was measured by using sit and reach box. Prior to and after end of practice period all subjects were tested. The results of pre - test and post-test were compared with using Analysis of Co - variance. Finding of flexibility shows significant improvement due to the twelve weeks yogic practice when compared to the control group.

**Dr. Asai K. K. and Dr. Dhakne R.R. (2015)**, has chosen a parallel group design for conducting experiment in the present study. Sixty female students (N - 60) from D.B. Kulkarni Girls High School, Naigaon, Daddar, Mumbai; were selected randomly for the present study. The entire subject was between the age group of 13 to 15 years. Experimental group was given specific yogic exercise training programme of 8 weeks to observe the promotion of certain physical and physiological variables as compared to control group. The overall significance of the data was acceptable at the 0.01 level of significance (F - 4723.41. $p < 0.01$). This result indicates that there must be significant difference in between the groups and within the groups including their inter - actions. On the basis of the obtained results, training of the yogic exercises for a period of 6 - weeks improved the selected physical fitness variables viz. range of flexibility of joints and muscle, abdominal strength and endurance and reaction time as well as improving the overall selected physical variables and associated physiological variables of school girls.

## Objective of the Study

To determine the effect of specific yogic exercises on selected motor fitness variables i.e., abdominal strength, Agility, Flexibility, Power of leg, Speed and Endurance (Aerobic Fitness)of Senior Secondary School Students.

## Hypothesis of the Study

There would be significant effect of specific yogic exercises on selected motor fitness variables i.e., abdominal strength, Agility, Flexibility, Power of leg, Speed and Endurance (Aerobic Fitness) of Senior Secondary School Students.

## Methodology

The experimental study has been designed to investigate the motor fitness of 36 students belongs to Government senior secondary school Baddi in Solan district of Himachal Pradesh. The researcher selected the students after applying random sampling techniques. The sampled students have been selected from 9th to 11th standard. In yogic exercise, they were imparting Yogasanas, om chanting, Surya namaskar and various pranayama exercises in the morning session regularly for eight weeks duration.

**Selection of Variables**

The investigator has examined the scientific literature pertaining to motor fitness variables, from different library. Along with the literatures, the administrative feasibility, availability of infrastructures, instruments, time factor and cost factor were also given due consideration while selecting the following variables and test items.

**Motor fitness variables:**

Eclosed as Annexure 01

## Result

**Table - 1**

**Mean S.D. and 't' value for Abdominal Strength (Sit-up 60 Seconds) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages**

Eclosed as Annexure 02

From the results presented in table 1 it has been observed that Senior Secondary School Students of age between 14-17 years the pre-experimental mean score of experimental groups in the abdominal strength variable is 23.64 and mean score of the post experimental of the same group is 30.53. Standard deviation 1.624 and 7.237 respectively and mean differences 6.89. Calculated t-value is 5.995. The obtained 't' value is statistically significant at 0.01 level of confidence When compared with 't' table. (The table value of 't' at 0.01 level for df 35 = 2.72).

This indicate that the average score of abdominal strength shows significant improvement, which can be attributed to the effect of training with selected yogic exercise.

Hence, the formulated hypothesis that "there would be significant effect of specific yogic exercises on abdominal strength of Senior Secondary School Students" has been accepted.

**Table - 2**

**Mean S.D. and 't' value for Agility (Shuttle Run) of Motor Fitness Variable of Senior Secondary School boys of Experimental Group in Pre-Experimental and Post Experimental Stages**

Eclosed as Annexure 03

From the results presented in table 2 it has been observed that Senior Secondary School Students of age between 14-17 years the pre-experimental mean score of experimental groups in the variable of Agility is 10.9164 and mean score of the post experimental of the same group is 9.724. Standard deviation .62354 and 1.6415respectively and mean difference is 1.19. Calculated t-value is 4.603. The obtained 't' value is statistically significant at 0.01 level of confidence when compared with 't' table. (The table value of 't' at 0.01 level for df 35 = 2.72).

This indicate that the average score of Agility shows significant improvement, which can be attributed to the effect of training with selected yogic exercise.

Hence, the formulated hypothesis that "*there would be significant effect of specific yogic exercises on Agility of Senior Secondary School Students*" has been accepted.

**Table - 3**

**Mean S.D. and 't' value for Flexibility (Sit & Reach Test) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages**

Enclosed as Annexure 04

From the results presented in table 3 it has been observed that Senior Secondary

School Students of age between 14-17 years the pre-experimental mean score of experimental groups in the Flexibility (Sit & Reach Test) variable is 3.1497 and mean score of the post experimental of the same group is 5.5617. Standard deviation 1.16699 and 2.49590 respectively and Mean Difference is 2.41. Calculated t-value is 6.984. The obtained 't' value is statistically significant at 0.01 level of confidence when compared with 't' table. (The table value of 't' at 0.01 level for df 35 = 2.72).

This indicate that the average score of Flexibility (Sit & Reach Test) shows significant improvement, which can be attributed to the effect of training with selected yogic exercise.

Hence, the formulated hypothesis that "*there would be significant effect of specific yogic exercises on Flexibility of Senior Secondary School Students*" has been accepted.

**Table - 4**

**Mean S.D. and 't' value for Power of Leg (Standing Broad Jump) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages**

Enclosed as Annexure 05

From the results presented in table 4 it has been observed that Senior Secondary School Students of age between 14-17 years the pre-experimental mean score of experimental groups in the Power of leg (Standing Broad Jump) variable is 5.372 and mean score of the post experimental of the same group is 5.978. Standard deviation 0.8038 and 0.8257 respectively and Mean Difference is 0.61. Calculated t-value is 7.041. The obtained 't' value is statistically significant at 0.01 level of confidence when compared with 't' table. (The table value of 't' at 0.01 level for df 35 = 2.72).

This indicate that the average score of Power of leg (Standing Broad Jump) shows significant improvement, which can be attributed to the effect of training with selected yogic exercise.

Hence, the formulated hypothesis that "*there would be significant effect of specific yogic exercises on Power of leg of Senior Secondary School Students"* has been accepted.

**Table - 5**

**Mean S.D. and 't' value for Speed (50 yard) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-Experimental and Post Experimental stages**

Enclosed as Annexure 06

From the results presented in table 5 it has been observed that Senior Secondary School Students of age between 14-17 years the pre-experimental mean score of experimental groups in the Speed (50 yard) variable is 9.9628 and mean score of the post experimental of the same group is 9.4311. Standard deviation 0.59764 and 0.66435 respectively and Mean Difference is 0.53. Calculated t-value is 5.800. The obtained 't' value is statistically significant at 0.01 level of confidence when compared with 't' table. (The table value of 't' at 0.01 level for df 35 = 2.72).

This indicate that the average score of Speed (50 yard) shows significant improvement, which can be attributed to the effect of training with selected yogic exercise.

Hence, the formulated hypothesis that *"there would be significant effect of specific yogic exercises on Speed of Senior Secondary School Students"* has been accepted.

**Table - 6**

**Mean S.D. and 't' value for Endurance (Aerobic Fitness-600 mtr. Run Walk) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages**

Enclosed as Annexure 07

From the results presented in table 6 it has been observed that Senior Secondary School Students of age between 14-17 years the pre-experimental mean score of experimental groups in the Endurance (Aerobic Fitness-600 mtr. Run walk) variable is 2.6692 and mean score of the post experimental of the same group is 2.4506. Standard deviation 0.39015 and 0.33952 and respectively and Mean Difference is 0.22. Calculated t-value is 4.801. The obtained 't' value is statistically significant at 0.01 level of confidence when compared with 't' table. (The table value of 't' at 0.01 level for df 35 = 2.72).

This indicate that the average score of Endurance (Aerobic Fitness-600 mtr. Run walk) shows significant improvement, which can be attributed to the effect of training with selected yogic exercise.

Hence, the formulated hypothesis that *"there would be significant effect of specific yogic exercises on Endurance of Senior Secondary School Students"* has been accepted.

## Discussion

The result presented in table-1 reveled that after experiencing 8 weeks specific yogic exercises training program, a significant improvement was observed in abdominal strength among Senior Secondary School Students of experimental group. The obtained result may be attributed to the facts that abdominal Strength of any individual depends on core muscles those are deep within the abdominals and back, attaching to the spine or pelvis. Some of these muscles include the transversus abdominis, the muscles of the pelvic floor, and the oblique muscles. After obtaining 8 weeks specific yogic exercise by Senior Secondary School students show significant improvement in Abdominal strength. It may be due to the practice of various asanas like Nouka Asana, Chakra Asana, Bhujang Asana, Uttanpadasana and Ushtra Asana which improve the abdominal strength of the students.

The result presented in table-2 reveled that after experiencing 8 weeks specific yogic exercises training program, a significant improvement was observed in Senior Secondary School Students of experimental group in the variable of Agility. The obtained result may be attributed to the facts that Agility of any individual depends upon neuromuscular coordination, which is regulated by muscle tone, neuromuscular receptor, transmission of nerve impulses etc. The significant improvement in the Agility may occur in Senior Secondary School Students after obtaining eight-week specific yogic exercise training in which they practiced Surya Namaskar in fast pace. That's why Agility of Senior Secondary School Students may improve significantly.

The result presented in table-3 reveled that after experiencing 8 weeks specific yogic exercises training program, a significant

Improvement was observed in Senior Secondary School Students of experimental group in the variable of Flexibility**.** The obtained result may be attributed to the facts that Flexibility of any individual depends upon elasticity of muscles, ligaments and tendons. The significant improvement in the Flexibility may be due to the fact that the Senior Secondary School Students obtained eight-week specific yogic exercise training. In this training they involve themselves in training of practiced training on various asanas like Dhanurasana, Paschimotan Asana, Trikona Asana, Tada asanas, Pad hast Asana, Hala Asana and Bhujang Asana by concentrated and regular practice of these asanas flexibility of one can be increased easily & readily.

The result presented in table-4 reveled that after experiencing 8 weeks specific yogic exercises training program, a significant improvement was observed in Senior Secondary School Students of experimental group in the variable of Power of leg. The obtained result may be attributed to the facts that Power of leg of any individual depends upon upper leg including quadriceps and hamstrings. Calf muscles also work with other muscles of the lower leg to help move feet. The significant improvement in the Power of leg may be due to the fact that the Senior Secondary School Students obtained eight-week specific yogic exercise training in which they practiced Surya namaskar, Paschimotan Asana, Tada Asanas, Sarvangasana, Chakra Asana, Supt Vazra Asana and Bhunaman Asana in their training programme. That's why Power of leg of Senior Secondary School Students may be improve significantly.

The result presented in table -5 reveled that after experiencing 8 weeks specific yogic exercises training program, a significant improvement was observed in Senior Secondary School Students of experimental group in the variable of speed. The obtained result may be attributed to the facts that speed ability was

Increased due to conditioning of their muscles and improvement in the neuro-muscular coordination, which ultimately helps in improving the reaction time, reflex action time, improvement in the movement speed and acceleration ability. The significant improvement in the speed may be due to the fact that the Senior Secondary School Students obtained eight-week specific yogic exercise in which they take training on Surya namaskar in fast

Pace in a session regularly during training that's why speed of Senior Secondary School Students improve significantly.

The result presented in table - 6 reveled that after experiencing 8 weeks specific yogic exercises training program, a significant improvement was observed in Senior Secondary School Students of experimental group in the variable of Endurance (Aerobic Fitness). The obtained result may be attributed to the facts that Endurance ability increase due to conditioning of their muscles and improvement in the neuro-muscular coordination, which ultimately helps in improving the movement speed, acceleration ability and lung capacity of cardio vascular ability. The significant improvement in the Endurance may be due to the fact that the Senior Secondary School Students obtained eight-week specific yogic exercise training in which they practiced on Surya namaskar in slow pace and Anulom Vilom, Kpalbhati and Nadishodhan regularly. That's why Endurance of Senior Secondary School Students may improve significantly.

## Annexure

Annexure 01

Motor fitness variables

**Motor fitness variables:**

| Sr.No. | Variable Measured | Test Carried Out |
|---|---|---|
| 1 | Lower abdominal strength | Sit Ups |
| 2 | Agility | Shuttle Run |
| 3 | Flexibility | Sit & Reach Test |
| 4 | Power of leg | Standing Broad Jump |
| 5 | Speed | 50 yard running |
| 6 | Endurance (Aerobic Fitness) | 600 mtr. Run walk |

Annexure 02

Table - 1

Mean S.D. and 't' value for Abdominal Strength (Sit-up 60 Seconds) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages

| Particulars | N | Mean | Standard Deviation | Standard Error mean | Mean Difference (Mean Gain) | t |
|---|---|---|---|---|---|---|
| Pre- training | 36 | 23.64 | 1.624 | 0.271 | 6.89 | 5.995** |
| Post training | 36 | 30.53 | 7.237 | 1.206 | | |

**Significant at 0.01 level.

Annexure 03

Table - 2

Mean S.D. and 't' value for Agility (Shuttle Run) of Motor Fitness Variable of Senior Secondary School boys of Experimental Group in Pre-Experimental and Post Experimental Stages

| Particulars | N | Mean | Standard Deviation | Standard Error mean | Mean Difference (Mean lose) | t |
|---|---|---|---|---|---|---|
| Pre- training | 36 | 10.9164 | 0.62354 | 0.10392 | 1.19 | 4.603** |
| Post training | 36 | 9.724 | 1.6415 | 0.2736 | | |

**Significant at 0.01 level.

Annexure 04

Table - 3

Mean S.D. and 't' value for Flexibility (Sit & Reach Test) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages

| Particulars | N | Mean | Standard Deviation | Standard Error mean | Mean Difference (Mean gain) | t |
|---|---|---|---|---|---|---|
| Pre- training | 36 | 3.1497 | 1.16699 | 0.19450 | 2.41 | 6.984** |
| Post training | 36 | 5.5617 | 2.49590 | 0.41598 | | |

**Significant at 0.01 level.

Annexure 05

Table - 4

Mean S.D. and 't' value for Power of Leg (Standing Broad Jump) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages

| Particulars | N | Mean | Standard Deviation | Standard Error mean | Mean Difference (Mean gain) | t |
|---|---|---|---|---|---|---|
| Pre- training | 36 | 5.372 | 0.8038 | 0.1340 | 0.61 | 7.041** |
| Post training | 36 | 5.978 | 0.8257 | 0.1376 | | |

**Significant at 0.01 level.

Annexure 06

Table - 5

Mean S.D. and 't' value for Speed (50 yard) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-Experimental and Post Experimental stages

| Particulars | N | Mean | Standard Deviation | Standard Error mean | Mean Difference (Mean lose) | t |
|---|---|---|---|---|---|---|
| Pre- training | 36 | 9.9628 | 0.59764 | 0.09961 | 0.53 | 5.800** |
| Post training | 36 | 9.4311 | 0.66435 | 0.11073 | | |

**Significant at 0.01level.

Annexure 07

Table - 6

Mean S.D. and 't' value for Endurance (Aerobic Fitness-600 mtr. Run Walk) of Motor Fitness Variable of Senior Secondary School Boys of Experimental Group in Pre-experimental and Post Experimental Stages

| Particulars | N | Mean | Standard Deviation | Standard Error mean | Mean Difference (Mean lose) | t |
|---|---|---|---|---|---|---|
| Pre- training | 36 | 2.6692 | 0.39015 | 0.06503 | 0.22 | 4.801** |
| Post training | 36 | 2.4506 | 0.33952 | 0.05659 | | |

**Significant at 0.01level.

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