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Effect of suryanamaskar practice and swiss ball training on balance among school boys

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Abstract
For the purpose of the study 30 school boys from Jothi Vallalar Hr- Sec School, Periyakalapet, Puducherry were randomly selected and their age ranged between 15 to 17 years. Subjects were asked to assemble the yoga hall in the evening hours and were given training. They were divided into three groups I, II and III with 10 subjects in each group. Experimental group I was treated with suryanamaskar practice, experimental group II were given swiss ball training and group III was kept under control group. The experimental groups participated their respective suryanamaskar practice and swiss ball training for period of twelve weeks and six days per week. The pretest and posttest on balance was measured and the data was statistically analyzed by using ANCOVA to find out the significant difference among the three groups. The finding of the study revealed that there was a beneficial effect on balance for both the experimental groups when compared to the control. The training was more effective for swiss ball training group than suryanamaskar practice group.

Keywords: balance, suryanamaskar, swiss ball and yoga

1. Introduction

1.1 Yoga

The word Yoga is divided from the Sanskrit root yuj. Yoga means to "Yoke", to "Bind", to "Link" to "Connect" or to "Merge". It is possible only through the control over sense organs and through continued practice and detachment. According to the great sage Patanjali, "The withdrawal of sense organs from their worldly objects and their control is yoga", "Yoga is a system of integrate education of the body, the mind and the inner sprit. It is a way to attain salvation and to get oneself freed from the cycle of birth and death. Its main purpose is the elimination of the forces harmful to the soul".

1.2 Suryanamaskar

Suryanamaskar is the complete sadhana, spiritual practice; in itself for it includes asana, pranayama mantra and meditation techniques. It is an excellent group of asanas with which to start morning practice. However, it is an effective way of loosening stretching, massaging and toning all the joints, muscles and internal organs of the body. Its versatility and application make it one of the most useful methods of inducting a healthy, vigorous and active life, while at the same time preparing for spiritual awakening and the resulting expansion of awareness.

1.3 Swiss Ball

Swiss ball movements require a greater degree of coordination by the user than do conventional floor stretches. The swiss ball also permits the execution of both static stretches (where the target body part is fully extended), as well as more demanding dynamic stretches, where the user directs force into or through the extended joint. While a swiss ball routine may have both aerobic and anaerobic benefits, depending on the intensity, duration, and the frequency with which the exercises are performed, swiss ball training is not a substitute for either type of exercise. The swiss ball is an ideal supplement to an existing training program, such as yoga, which promote greater strength and flexibility in a safe and controlled physical setting.

Using the swiss ball during training process, utilize many additional muscles to maintain stability and balance. Swiss ball are less stable than traditional fitness equipment, which may greatly improve the balance, coordination and core strength. The alignments of the body also improve when proper balance is maintained.

2. Materials and Methods

2.1 Selection of Subjects

To systematize the study, subjects were divided into three groups (experimental group I, II and control group). A total of 30 boys (10 boys in each group) age ranged from 15 to 17 years from Jothi Vallalar Hr-Sec School Periyakalapet, Puducherry, selected as subjects for the study. The purpose of the researcher was explained to all the subjects and subjects were motivated to put their best during each trial.

2.2 Selection of Variables

- Independent Variables (Duration – Twelve Weeks)
- Suryanamaskar Practice
- Swiss ball Training
- Dependent Variables
- Balance

2.3 Criterion Measures

Balance was measured through stork stand balance test. The test requires the person to stand on one leg for as long as possible.

Table 1: Criterion Measures

Variable	Test	Unit
Balance	Stork Stand Balance Test	Seconds

2.4 Experimental Design

Pre and post design was adopted for this study. Further the subjects are divided into three groups. Experimental groups

and control group. The experimental groups participated in training programme. No treatment was given to control group. The training programme was carried out for a total duration of twelve weeks. Duration of training programme was of 45 minutes / day. The training was carried out in the school yoga hall. The subjects living condition and life style are not taken into consideration for this study.

2.5 Administration of Training Programme

The training schedule prescribed by the researcher was applied to experimental groups and training was personally supervised by the researcher. The training was carried out for a period of twelve weeks, six days a week excluding the time consumed for conducting pre and post-test. The researcher demonstrated the training for experimental groups performed their respective training (Suryanamaskar Practice and Swiss ball Training). Sufficient and required was provided between the tests. The control group was not allowed to undergo the training programme.

2.6 Administration of Test

Purpose: to access whole body balance ability.
Equipment required: flat, non – slip surface stopwatch, paper and pencil.
Duration: 45 minutes / day
Score: the total time in seconds is recorded. The score is the best of three attempts

Table 2: List of Ratings

Rating	Score (Seconds)
Excellent	>50
Good	40 - 50
Average	25 - 39
Fair	10 - 24
Poor	<10

2.7 Statistical Analysis

The differences in the mean of experimental groups and a control group to balance was tested for significance by applying analysis of covariance (ANCOVA) and the level of significance chosen was 0.05.

3. Results

The main purpose of the study was the effect of suryanamaskar practice and swiss ball training on balance among school boys. To analyse the effects of suryanamaskar practice and swiss ball training on balance.
In this study, different types of descriptive statistics such as mean and standard deviation was computed to describe each variable statistically. The level of significance was set at 0.05. Its results have been depicted in following tables.

Table 4: Pre and Post Test on Balance of Mean and Standard Deviation among Experimental Groups and Control Group

Variables	Group	Test	Mean	Standard Deviation
Balance	Experimental Group I	Pre-Test	8.28	1.75
		Post Test	14.39	1.84
	Experimental Group II	Pre-Test	8.78	1.83
		Post Test	16.75	2.04
	Control Group	Pre-Test	8.79	1.85
		Post Test	9.01	1.84

Table 4 shows the pre and post test scores on balance for suryanamaskar practice group, swiss ball training group and control group. The initial and final means for suryanamaskar practice group, swiss ball training group and control group on balance test were 8.28 and 14.39, 8.78 and 16.75, 8.79 and 9.01.

Table 5: Analysis of Variance of Experimental Groups and Control Group on Balance

Variables	Source of Variance	df	Sum of Squares for x	Sum of Squares for y	Mean Squares for x	Mean Squares for y	'F' ratio
Balance	Between Groups	2	1.72	314.49	0.86	154.25	54.70
	Within Groups	27	88.35	77.61	3.27	2.87	

*Significant at 0.05 level of confidence with degrees of freedom for 2 and 27. Required table value at 0.05 level is 3.35.

Table 5 shows the pre and post test results of analysis of variance on balance for three different groups namely suryanamaskar practice group, swiss ball training group and control group. The calculated 'F' value is 54.70, which is significant at 0.05 level of confidence. This implies that there is a significant change due to the effect of selected training.

Table 6: Analysis of Covariance of Experimental Groups and Control Group on Balance

Variables	Source of Variance	df	Sum of Squares for x	Sum of Squares for y	Mean Squares for x.y	Mean Squares for x.y	F ratio
Balance	Between Groups	2	314.49	322.77	154.25	116.38	136.06
	Within Groups	27	77.61	30.84	2.87	1.19	

*Significant at 0.05 level of confidence with degrees of freedom for 2 and 27. Required table value at 0.05 level is 3.35.

Table 6 shows the adjusted post-test means of analysis of covariance among the three groups on balance. The calculated 'F' value is 136.06 is greater than the required table value 3.35 at 0.05 level of confidence. This indicates that there is a significant difference among the groups which indicates that there was an effect in training programme which in turn induces changes in the post test programme.

Table 7: Scheffe's test for Difference between the Adjusted Post-Test Mean on Balance

Swiss Ball Training	Suryanamaskar Practice Group	Control Group	Mean Difference
16.63	14.64	-	1.99*
16.63	-	8.89	7.74*
-	14.64	8.89	5.75*

* **Significant at 0.05 level.**

The mean difference and the adjusted post-test means of balance are presented in the above table 7 when the experimental groups were compared with the control group. The mean differences were 1.99, 7.74 and 5.75 which were significant at 0.05 level of confidence. Hence there was a significant difference between experimental groups and control group in balance of school boys.

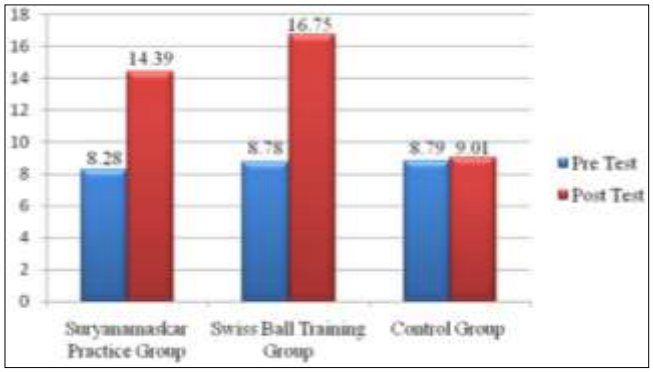

Fig 1: Bar Diagram of Mean Diffrence among Experimentol Groups and Control Group on Balance

4. Discussion on Findings

The study was framed to analyze and compare the effect of suryanamaskar practice and swiss ball training on balance among school boys. The subjects were given training on suryanamaskar practice and swiss ball training continuously for a period of twelve weeks for six days in a week. The selected physical variable is balance. The main aim of the study was to maintain and enhance the efficiency of physical fitness.

The results of the study are in consonance with the findings of the following studies by Escamilla, et. al., (2010) and Marshall and Murphy (2005).

5. Conclusion

It was observed from the pre-test results, it was noticed that there was no significant differences among experimental groups and control group. While the post test results of experimental groups and control group revealed that, there was a significant difference among the three groups. The training program has influenced the experimental groups whereas there was no effect in the control group.

In the analysis of co-variance on balance among two experimental groups and control group, a significant difference was revealed which throws light on the application for twelve weeks suryanamaskar practice and swiss ball training. From the statistical analysis it is clear that both the training programmes had its own effects. But the swiss ball training showed more effects in balance when compared to suryanamaskar practice group and control group.

6. References

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