

EFFECT OF PILATES EXERCISE CALISTHENICS EXERCISE AND COMBINATION OF PILATES AND CALISTHENICS EXERCISE ON FLEXIBILITY & STRENGTH OF SCHOOL BOYS

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Abstract

The purpose of study was to determine the effect of Pilates Exercise Calisthenics Exercise and Combination of Pilates and Calisthenics Exercise on Flexibility & Strength on School Boys. To achieve the purpose of the study Sixty (60) school boys studying in Raj English School of Sarnath, Varanasi, and U.P. region were selected as subject at randomly and their range of age is between 14 to 17 years. The study was confined to the following flexibility and strength variables. Flexibility was measured by sit & reach test and was recorded in inch. Strength was measured by push up test and was recorded in numbers. To find out the variance in the selected criterion variables due to the application of independent variables, analysis of covariance (ANCOVA) was applied and the level of significance was set at the 0.05 on each criterion variables. The above result indicated that experimental group (Pilates, Calisthenics and Combined exercise group) were significantly improved the flexibility and strength, when compared with the control group. It was also indicated that combined experimental group IV had significantly improved the flexibility greater than the other two experimental groups when compared with the control group.

Keywords: Pilates exercise, Calisthenics exercises, flexibility and strength

Introduction

Pilates, a method of exercise developed by Joseph Pilates during World War I, can help children grow stronger and improve their flexibility. Its original purpose was to help bedridden patients develop strength. Pilates is a system of physical and mental conditioning that can enhance your physical strength, flexibility and coordination as well as reduce stress, improve mental focus faster and improved sense of well being.

Calisthenics Exercise

Calisthenics originated in ancient Greece and linked to Greco-Roman gymnastics. Calisthenics exercises are a form of exercise consisting of a variety of simple, often

rhythical movement, intend to increase body strength and flexibility with movements such as bending, jumping, swinging, twisting, kicking, using only one's body weight for resistance. Calisthenics when performed vigorously and with variety can benefit both muscular and cardiovascular fitness, in addition to improving psychomotor skills such as balance, agility and coordination. Calisthenics can be done by people in all age groups and genders and without risk of injury when done properly.

Objectives of the Study

To find out the Effect of Pilates exercise, Calisthenics exercise and Combined Pilates and Calisthenics exercise on flexibility and strength variables of school boys.

Hypothesis

It is hypothesized that there would be significance differences on flexibility and strength variables varied due to Pilates exercise, calisthenics exercise and combined Pilates and calisthenics exercise among school boys.

Methodology and Procedure

To achieve these purpose Sixty (60) school boys were selected randomly, from Varanasi, U.P. state. Their age ranged from 12 to 17 years. The selected subjects were divided into four equal groups of fifteen subjects each at randomly, which were three experimental groups and a control group. I.e. effect of Pilates exercise (Group I), Calisthenics exercise (Group II), Pilates and Calisthenics exercise (Group III) and one control (Group IV), which was stipulated for 12 week (5 alternate days per week) they participated in the research voluntarily and cheerfully without any compulsion.

Statistical Procedure

The data were collected from the four groups on flexibility and strength variables test the data were statistically examined to find out whether there is any significant difference by applying the analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test mean found significant, Scheffe's post hoc test

was applied to determine which of the four paired means significantly differed. To analyze the data obtained from the variables of experimental groups and control groups ANCOVA was applied as statistical technique. The test of significance was fixed at 0.05 levels and 0.01 of significance.

Results and Findings

Table I
ANALYSIS OF CO-VARIANCE OF THE MEANS OF EXPERIMENTAL GROUP AND CONTROL GROUP IN RELATION TO FLEXIBILITY

	Group				SV	SS	MSS	F Ratio
	Cont.	Pilates	Calisth.	Comb.				
Pre test					B	5.84	1.95	
Mean S.D.	13.32 0.82	13.96 0.89	13.25 0.92	13.18 0.852	W	69.16	1.23	2.54
Post test					B	27.55	9.18	
Mean S.D.	14.40 0.81	15.25 1.16	15.94 1.16	16.12 1.24	W	66.68	1.19	7.71*
Adj. post test					B	26.65	8.88	
	14.41	15.89	15.27	16.15	W	66.23	1.20	7.38*

* Significant at 0.05 level (3&55) at 0.05 level = 2.77

Table I reveals the mean and standard deviation of Flexibility Pre (Control Group 13.32 ± 0.82 Pilates Exercise Group 13.96 ± 0.89 Calisthenics Exercise Group 13.25 ± 0.92 Combined Group 13.18 ± 0.85) and Post (Control Group 14.40 ± 0.81 Pilates Exercise Group 15.25 ± 1.08 Calisthenics Exercise Group 15.94 ± 1.16 Combined Group 16.12 ± 1.24) respectively.

The analysis of co-variance for flexibility indicated that the resultant F-ratio of 2.54 was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to the experimental groups was quite successful. The post-test means of all the four groups yielded an F-ratio of 7.71, which was significant at 0.05 level of significance. The F-ratio needed for significance with 3, 56 degree of freedom is 2.77 at 0.05 level of significance. The difference between the adjusted post mean was found significant as the obtained F-ratio was 7.38. The F-ratio needed for significance at 0.05 level of significance was 2.77. Thus, significant difference exists between experimental and control group in relation to flexibility. In order to determine which groups differ significantly post hoc mean was applied.

Table II
POST HOC MEAN COMPARISON OF EXPERIMENTAL AND CONTROL GROUP IN RELATION TO FLEXIBILITY

Control	Pilates	Calisthenics	Combined	MD
14.41	15.89			1.48*
14.41		15.27		0.86*
14.41			16.15	1.74*
	15.89	15.27		0.62
	15.89		16.15	0.26
		15.27	16.15	0.88*

* Significant at 0.05 level (3&55) at 0.05 level = 2.77

Table II Show the differences between the paired adjusted post test means on Flexibility. The significance interval value at 0.05 levels was 0.82. The adjusted post test means differences on flexibility between

experimental group and Control group was significant at 0.05 levels. The adjusted post test mean difference of 0.62 was obtained between Pilates group and Calisthenics group. Obtained value lower than C.I. value, so it's insignificant difference between Pilate's group and Calisthenics group and also 0.26 is insignificant difference between Pilate's group and calisthenics group. The adjusted post test mean difference of 0.88 was obtained between Calisthenics group and Combined group. The obtained value was significant at 0.05 levels.

Table III
ANALYSIS OF CO-VARIANCE OF THE MEANS OF EXPERIMENTAL GROUP AND THE CONTROL GROUP IN RELATION TO STRENGTH

	Group				S	SS	MSS	F Ratio
	Control	Pilates	Calisth.	Comb.				
Pre test					B	9.73	3.24	
Mean S.D.	13.46 1.92	13.06 2.25	12.73 1.98	13.80 3.21	W	322.00	5.75	
Post test					B	261.20	87.06	
Mean S.D.	14.40 1.53	17.53 2.03	17.86 2.69	19.86 3.04	W	322.13	5.75	
Adjusted post test					B	258.81	86.27	
	13.89	17.70	18.33	19.40	W	76.79	1.39	61.78*

* Significant at 0.05 level (3&55) at 0.05 level = 2.77

Table III reveals the mean and standard deviation of Strength Pre (Control Group 13.46 ± 1.92 Pilates Exercise Group 13.06 ± 2.22 Calisthenics Exercise Group 12.73 ± 1.98 Combined Group 13.80 ± 3.21) and Post (Control Group 14.40 ± 1.53 Pilates Exercise Group 17.53 ± 2.03 Calisthenics Exercise Group 17.86 ± 2.69 Combined Group 19.86 ± 3.04) respectively. The analysis of co-variance for Strength indicated that the resultant F-ratio of 0.56 was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to the experimental groups was quite unsuccessful. The post-test means of all the four groups yielded a F-ratio of 15.13, which was significant at 0.05 level of significance. The F-ratio needed for significance with 3, 56 degree of freedom is 2.77 at 0.05 level of significance. The difference between the adjusted post mean was found significant as the obtained F-ratio was 61.78. The F-ratio needed for significance at 0.05 level of significance was 2.77. Thus, significant difference exists between experimental and control group in relation to Strength. In order to determine which groups differ significantly post hoc mean was applied.

Table IV
POST HOC MEAN COMPARISON OF EXPERIMENTAL AND CONTROL GROUP IN RELATION TO STRENGTH

Control	Pilates	Calisthenics	Combined	MD
13.89	17.70			3.81*
13.89		18.33		4.44*
13.89			19.40	5.50*
	17.70	18.33		0.62
	17.70		19.40	1.69*
		18.33	19.40	1.06

Significant at 0.05 level of significance i.e., = 1.52

Table IV Show the differences between the paired adjusted post test means on Strength. The significance interval value at 0.05 levels was 1.52. The adjusted post test means differences on Strength between experimental group and Control group was significant at 0.05. The adjusted post test mean difference of 0.62 was insignificant between Pilates group and Calisthenics group and also 1.06 was no significant between Calisthenics group and Combined group at 0.05 levels. Obtained value was lower than C.I. value. The adjusted post test mean difference of 1.69 was obtained between Pilates group and combined group. The obtained value was significant at 0.05 levels.

Discussion of Finding

The result of this study reveals that no significantly differences in flexibility and strength in the pre test between experimental and control group. After the post test and adjusted post test experimental group (Pilates, Calisthenics and Combined exercise group) were significantly improved the flexibility and strength when compared with the control group. It was also found that combined experimental group IV had significantly improved the flexibility greater than the other two experimental groups when compared with control group.

Conclusion

Systematic programmes of Pilates exercise, calisthenics exercise and combined Pilates and calisthenics exercise training increase strength and flexibility of school boys. Each programme has their separate influence on school boys. Calisthenics exercise group proved significantly better on variables like strength and flexibility, But Pilates exercise also proved significantly better in managing like flexibility and strength variables. Among

the three groups would be highly effective in controlling strength and flexibility. It is found that the combined exercise group is found to be better than both Pilates and Calisthenics exercise group in improving variable like strength and flexibility.

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