

EFFECT OF PILATES CALISTHENICS AND COMBINED PILATES AND CALISTHENICS EXERCISE ON FLEXIBILITY & SPEED OF SCHOOL BOYS

(Received on: 21 Jan 2013, Reviewed on: 14 Feb 2014 and Accepted on: 12 March 2014)

Mr. Rajeev Srivastava, Research Scholar,
Pondicherry University,
Pondicherry, (TN), India



Abstract

The purpose of study was to determine the effect of Pilates Exercise Calisthenics Exercise and Combination of Pilates and Calisthenics Exercise on Flexibility & Speed 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 17years. The study was confined to the following flexibility and speed variables. Flexibility was measured by sit & reach test and was recorded in inch. Speed was measured by 50 yard dash test and time recorded in second. 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 speed, when compared with the control group. It was also indicated that combined experimental group IV had significantly improved the flexibility and speed greater than the other two experimental groups when compared with the control group.

Keywords: Pilates exercise, Calisthenics exercises, Flexibility and Speed

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 co-ordination as well as reduce stress, improve mental focus faster an improved sense of wellbeing. 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 rhythmical, 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. By adding calisthenics to your exercise regime and going on a good diet, tremendous improvements to your health

and level of fitness will result. Improves overall stamina, strength, energy, agility, coordination, balance, and promotes overall fitness for your health. Can improve mental health just as it does psycho-motor skills like balance and coordination. Can help treat mental problems such as stress, anxiety, depression, etc. and can boost your self-esteem.

Objectives of the Study

To find out the Effect of Pilates exercise, Calisthenics exercise and Combined Pilates and Calisthenics exercise on flexibility and speed variables of 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 (5alternate days per week) they participated in the research voluntarily and cheerfully without any compulsion.

Training Programs

Pilates exercise	12 weeks
Calisthenics exercise	12 weeks
Combination of Pilates and Calisthenics exercise	12 weeks

Training Volume – 5 sessions per week (each session consisted of exercising for a maximum of 45 minutes).

Statistical Procedure

The data was collected from four groups on selected variables. To find out the variance in the selected criterion variables due to the application of independent variables, analysis of covariance (ANCOVA) was applied on each criterion variables. Whenever the 'F' ratio for adjusted post-test mean was found significant, LSD post hoc test was applied to determine which of the four paired means significantly differed. The test of significance was fixed at 0.05 level and 0.01of significance.

Statistical Analysis /Result

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

	Group				SV	df	SS	MSS	F Ratio
	Control	Pilates	Cal.	Comb.					
Pre-test Mean	13.32	13.96	13.25	13.18	B	3	5.84	1.95	2.54
S.D.	0.82	0.89	0.92	0.85	W	56	69.16	1.23	
Post-test Mean	14.40	15.25	15.94	16.12	B	3	27.55	9.18	7.71*
S.D.	0.81	1.08	1.16	1.24	W	56	66.68	1.19	
Adjusted post-test	14.41	15.89	15.27	16.15	B	3	26.65	8.88	7.38*
					W	55	66.23	1.20	

* Significant at $t_{(3,56)(0.05)}$ 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±.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

Groups				MD
Control	Pilates	Calisthenics	Combined	
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*

Significance interval value at 0.05 level = 0.82

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 CONTROL GROUP IN RELATION TO SPEED

	Group				SV	df	SS	MSS	F Ratio
	Control	Pilates	Cal.	Comb.					
Pre-test Mean	7.05	6.91	6.99	6.85	B	3	0.344	0.115	1.190
S.D.	0.37	0.30	0.18	0.33	W	56	5.390	0.096	
Post-test Mean	7.04	6.70	6.75	6.44	B	3	2.696	0.899	11.410*
S.D.	0.35	0.28	0.14	0.29	W	56	4.411	0.079	
Adjusted post-test Mean	6.96	6.74	6.72	6.52	B	3	1.354	0.451	35.299*
					W	55	0.703	0.013	

* Significant at $t_{(3,56)(0.05)}$ level = 2.77

Table III reveals the mean and standard deviation of Speed Pre (Control Group 7.05 ±0.37 Pilates Exercise Group 6.91 ±0.30 Calisthenics Exercise Group 6.99 ±0.18 Combined Group 6.85±0.33) and Post (Control Group 7.04 ±0.35 Pilates Exercise Group 6.70 ±0.28 Calisthenics Exercise Group 6.75 ±0.14 Combined Group 6.44±0.29) respectively. The analysis of co-variance for speed indicated that the resultant F-ratio of 1.190 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 11.410 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-test mean was found significant as the obtained F-ratio was 35.299. 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 speed. 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 SPEED

Group				MD
Control	Pilates	Calisthenics	Combined	
6.96	6.74			0.22*
6.96		6.72		0.24*
6.96			6.52	0.44*
	6.74	6.72		0.02
	6.74		6.52	0.22*
		6.72	6.52	0.20*

Significance interval value at 0.05 level = 0.12

Above show the differences between the paired adjusted post-test means on speed. The significance interval value at 0.05 levels was 0.12. The adjusted post-test means differences on speed between experimental group 1(Pilates exercise group) and Control group was 0.22 and the obtained value was significant at 0.05 level. The adjusted post-test mean difference of 0.24 was obtained between Calisthenics group and Control group. The obtained value was significant at 0.05 levels. The adjusted post-test mean difference of 0.44 was obtained between combined group and control group. The obtained value was significant at 0.05 levels. The adjusted post-test mean difference of 0.02 was obtained between Pilate's group and calisthenics group. This is lower than C.I.

value. Therefore is no significant difference between Pilate's group and calisthenics group. The adjusted post-test mean difference of 0.22 was obtained between Pilates group and combined group. The obtained value was significant at 0.05 levels. The adjusted post-test mean difference of 0.20 was obtained between

Calisthenics group and Combined group. The obtained value was significant at 0.05 levels.

The above result indicated that experimental group (Pilates, Calisthenics and Combined exercise group) were significantly improved the speed, when compared with the control group

Discussion and finding

The result of this study reveals that no significantly differences in flexibility and speed 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 speed 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

Based on the result achieved in the present research study, it was concluded that:

The Control group had not shown significant changes in any of the selected variables.

The Pilates exercise, Calisthenics exercise and Combined Pilates and Calisthenics exercise training group had shown significant improvement in speed variable of school boys when compared with the control group.

The Pilates exercise, Calisthenics exercise and Combined Pilates and Calisthenics exercise training group had shown significant improvement in flexibility variable of school boys when compared with the control group.

The Combination of Pilates and Calisthenics exercise training group was better than the Pilates exercise, and Calisthenics exercise on Speed and Flexibility of school boys.

References

- Bouchard, C., Blair, S.N., Haskell, W.L. (2007). Physical Activity and Health, Human Kinetics, USA, p. 274-278.
- Shephard, R. J. (2008). "The Importance of Oxygen Transport, Strength and Flexibility in Maintaining Independence of the Elderly", *Med Sport* 12 (4): 165-174.
- Segal, N.A., Hein J., and Basford J. (2004). "The Effects of Pilates Training on Flexibility and Body Composition: An Observational Study", *Archives of Physical Medicine and Rehabilitation* 85, 1977-1981.
- Kloubec, June A. (2005). Pilates Exercises for Improvement of Muscle Endurance, Flexibility, Balance and Posture. Doctor of Philosophy Thesis, UMI number: 3198106, University of Minnesota, USA.