ISSN: 2278-4632
Vol-10 Issue-5 No. 5 May 2020

IMPACT OF CALISTHENICS EXERCISE ON SELECTED PHYSICAL VARIABLES AMONG SCHOOL STUDENTS OF SLUM

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Abstract

The purpose of this investigation was to study the Impact of calisthenics exercises on selected physical fitness variables among school students of slum. For the present study 40 school boys from slum were selected randomly in the Good Samaritan School, New Delhi, India. The age group of the subjects ranged between 12 to 15 years. The selected subjects were randomly divided into two groups namely calisthenics exercise group and control group. The calisthenics exercise group underwent 8 weeks of calisthenics exercises programme, for 3 days in a week, for 45minuts per day, under the supervision of the guide. The control group does not undergo any specific training during the period of 8 weeks programme. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. The collected information were analyzed measurably through examination of covariance (ANCOVA) to discover out the noteworthiness contrast, on the off chance that any between the groups. For testing hypothesis the level of significance was set at 0.05, which was considered to be adequate for the purpose of the study. There was significant difference in flexibility and muscular endurance between pre and post test in calisthenics exercise group. But control group in two variables did not show significant advancement.

Keywords: Calisthenics exercises, Physical Fitness Variables. Slum students

INTRODUCTION

Calisthenics is a form of exercise consisting of a variety of movements which exercise large muscle groups such as running, standing, grasping, pushing, etc. These exercises are often performed rhythmically and with minimal equipment, as bodyweight exercises. They are intended to increase strength, fitness and flexibility, through movements such as pulling, pushing, bending, jumping, or swinging, using one's bodyweight for resistance. Calisthenics can provide the benefits of muscular and aerobic conditioning, in addition to improving psychomotor skills such as balance, agility and coordination.

The exercises arose in the early 19th century from the work of Germans Friedrich Ludwig Jahn and Adolf Spiess in popularizing gymnastics and were especially stressed by Per Henrik Ling of Sweden as important in the development of education for women. In the United States, Catherine Beecher was an early advocate of calisthenics and wrote *Physiology and Calisthenics for Schools and Families* (1857). As promoted by Beecher, calisthenics were intended solely for women, but they quickly became an activity for both sexes.

The health benefits of calisthenics were generally recognized by the beginning of the 20th century, and primary and secondary schools throughout the Western world began instituting the exercises as a regular activity. Calisthenics are also a part of military training.

ISSN: 2278-4632
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Studies on calisthenics are limited, with few available that test the effectiveness of calisthenics on improving muscle strength. These studies have concluded that calisthenic exercise does not result in strength improvement (Campney & Wehr, 1965; Shvartz & Tamir, 1971). Similarly, studies comparing the effectiveness of calisthenics on improving muscle strength to that of traditional weight training come to the same conclusions (Marcinik, Hodgdon, Mittleman, & O'Brien, 1985; Tsourlou, Gerodimos, Kellis, Stavropoulos, & Kellis, 2003). However, one major limitation with these conclusions is that these studies did not accurately apply the recommended strength training variables to the calisthenics exercises. In fact, the training variables used closely resembled those of a muscular endurance training program; given researchers focused on increasing the number of repetitions, rather than utilizing a more difficult variation for each exercise to keep the subjects' repetitions lower.

METHODOLOGY

To attain the reason of the study 40 school boys from slum were selected randomly in the Good Samaritan School, New Delhi, India. The age group of the subjects ranged between 12 to 15 years. The selected subjects were randomly divided into two groups namely Calisthenics exercise group and control group. The calisthenics exercises group underwent 8 weeks of Calisthenics exercise training programme, for 3 days in a week, for 45minutes per day, under the supervision of the guide. The control group does not undergo any specific training during the period of 8 weeks programme. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. The evaluated physical fitness parameters were Flexibility and Muscular Endurance. Flexibility was assessed by sit and reach test and Muscular Endurance was assessed by Bent Knee Sit-Up test. The collected information were analyzed measurably through examination of covariance (ANCOVA) to discover out the noteworthiness contrast, on the off chance that any between the groups. For testing hypothesis the level of significance was set at 0.05, which was considered to be adequate for the purpose of the study.

TABLE – I
Calisthenics exercise training schedule for impact per session

Training week	Name of the Calisthenics Exercises	Sets & Repetitions	Percentage
I & II	Push-ups	2x5	
	Pull-ups	2X5	
	Chin-ups	2x5	
	Squats	2x5	
	Leg raises	2x5	
	Planks	2x5	55%
	Burpees	2x5	
	Dips	2x5	
	Lunges	2x5	
	Jump squat	2x5	

ISSN: 2278-4632
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III & V	Push-ups Pull-ups Chin-ups Squats Leg raises Planks Burpees Dips Lunges Jump squat	2x7 2x7 2x7 2x7 2x7 2x7 2x7 2x7 2x7 2x7	60%
V & VI	Push-ups Pull-ups Chin-ups Squats Leg raises Planks Burpees Dips Lunges Jump squat	2x8 2x8 2x8 2x8 2x8 2x8 2x8 2x8 2x8 2x8	65%
VII & VIII	Push-ups Pull-ups Chin-ups Squats Leg raises Planks Burpees Dips Lunges Jump squat	3x8 3x8 3x8 3x8 3x8 3X8 3x8 3x8 3x8 3x8	70 %

TABLE – II
DESCRIPTIVE ANALYSIS OF FLEXIBILITY AND MUSCULAR ENDURANCE AMONG EXPERIMENTAL AND CONTROL GROUP

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post – Test Mean	SD (±)	Adjusted Mean
1	Flexibility	CEG	2.46	0.19	3.79	0.33	3.79
		CG	2.49	0.20	3.14	0.65	3.14
2	Muscular Endurance	CEG	21.03	0.58	24.03	0.51	24.04
		CG	21.12	0.61	22.73	1.64	22.72

CEG = Calisthenics Exercise Group **CG= Control Group**

ISSN: 2278-4632
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In table-II the pre, post-test means, standard deviations and adjusted means on flexibility and muscular endurance of school under studies of slum were numerically displayed. The analysis of covariance on chosen factors of Calisthenics exercise group and control group is displayed in table – III.

TABLE – III
COMPUTATION OF ANALYSIS OF COVARIANCE ON SELECTED PHYSICAL VARIABLES AMONG SCHOOL STUDENTS OF SLUM

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	Flexibility	Pre-test	**B.G.**	0.01	1	0.01	0.29
			W.G	1.53	38	0.04	
		Post-test	**B.G**	4.13	1	4.13	15.33*
			W.G	10.24	38	0.27	
		Adjusted means	**B.S.**	4.10	1	4.10	14.84*
			W.S.	10.24	37	0.27	
2	Muscular Endurance	Pre-test	**B.G.**	0.08	1	0.08	0.22
			W.G	13.69	38	0.36	
		Post-test	**B.G**	16.92	1	16.92	11.37*
			W.G	56.52	38	1.48	
		Adjusted means	**B.S.**	17.35	1	17.35	11.50*
			W.S.	55.81	37	1.50	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 &38 and 1 & 37 are 4.10 and 4.11 respectively).

In the table, the results of analysis of covariance on flexibility and muscular endurance, the obtained 'F' ratio of 0.29 and 0.22 for Pre-test means was less than the table value of 4.10 for df 1 and 38 required for significance at 0.05 level of confidence on flexibility and muscular endurance. The obtained 'F' ratio of 15.33 and 14.84 for post-test means was greater than the table value of 4.10 for df 1 and 38 required for significance at 0.05 level of confidence on flexibility and muscular endurance. The obtained 'F' ratio of 11.37 and 11.50 for adjusted post-test means was greater than the table value of 4.11 for df 1 and 37 required for significance at 0.05 level of confidence on flexibility and muscular endurance. The result of the study indicated that there was a significant difference among the adjusted post test means of Calisthenics exercise and control group on flexibility and muscular endurance. And also Calisthenics exercise group showed significant improvement on flexibility and muscular endurance compared to control group.

ISSN: 2278-4632
Vol-10 Issue-5 No. 5 May 2020

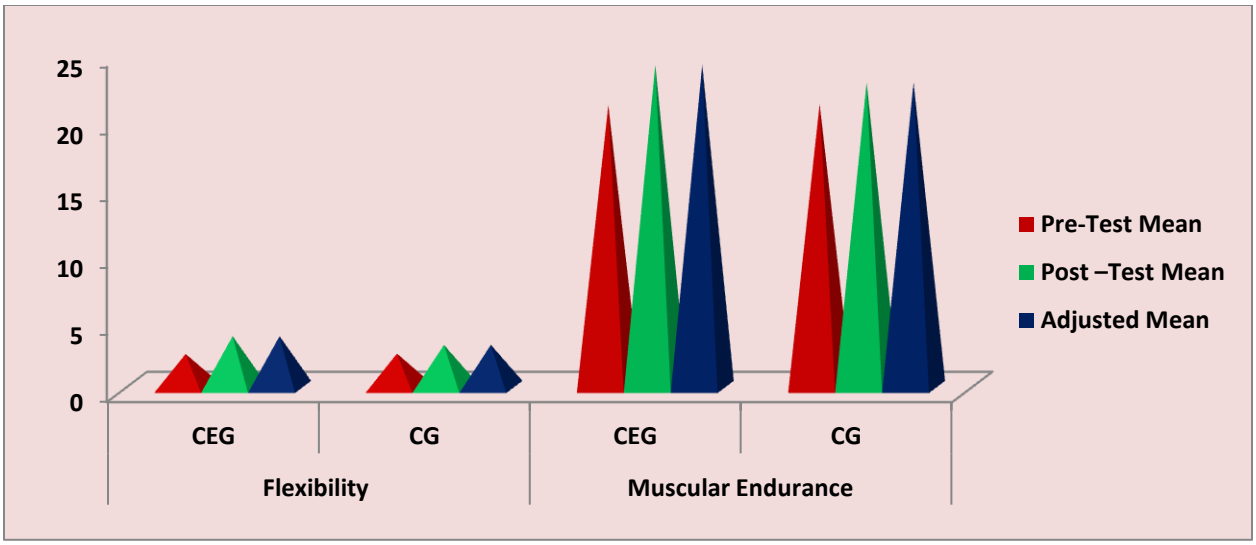

Figure-I The pre, post and adjusted mean values of flexibility and muscular endurance of calisthenics exercise group and control group are graphically represented in the figure-I.

DISCUSSION OF FINDINGS

The result of the present study reveals that after 8 weeks of Calisthenics exercises, there was significant difference found in the flexibility of the students. As we all know that the Calisthenics exercise is very effective in muscular development and improving the general co-ordination of the body. These exercises definitely improved the muscular endurance and this improvement in the muscle and general coordination of the Calisthenics exercise group have resulted into better flexibility and muscular endurance in comparison to the control group. The past thinks about on chosen flexibility and muscular endurance reveals of Satya Narayan and Akhil Mehrotra (2019), Rohisha (2018), Christopher Joseph Kotarsky (2016) and Shvartz & Tamir (1971).

CONCLUSIONS

From the investigation of information, the following conclusions were drawn.

1. It was concluded that calisthenics exercises group after eight weeks of Calisthenics exercises showed significant improvement on flexibility and muscular endurance.
2. The control group did not show significant advancement on flexibility and muscular endurance.

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