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Effect of Calisthenic Exercises on Shoulder Strength and Abdominal Endurance

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ABSTRACT

The objective of this investigation was to discover the effect of 3 months calisthenics training program on selected physical fitness components i.e. shoulder strength and abdominal endurance among school girl students. To attain the aim of this study 60 girl students were taken from Tagore Public School, Kaithal district in Haryana the age group 14 to 17 years. The selected 60 students were separated into two equivalent groups consisting of 30 students each such as calisthenics experimental and control groups. The experimental group was given treatment of calisthenics training program for 3 months and control group was instructed not to perform any type of specific physical exercises during experimental period. The data of selected physical fitness variables i.e. shoulder strength and abdominal endurance of all 60 subjects was collected before startingand immediately after completion of calisthenics training program. To see the substantial improvements in pre and post-tests between control and experimental groups, 't' test was applied. The statistical assessment of data shows noteworthy improvement in both selected physical fitness variables i.e. shoulder strength and abdominal endurance after the completion of three months calisthenics training program.

1. Introduction

Twenty first century saw the growth of the world of scientific and technological inventions including space, defense, atomic energy, computer, internet service and so on. With the establishment of the Internet we can get the necessary information in a fraction of a second from any part of the world. As a result of this advanced technological invention, human body movement has been curtailed and tensions of competition have increased. There is a feeling that the man has experienced a deer of depression, hypo kinetic and psychosomatic disorders. Therefore, the time has come for a man to not to ignore the importance of any physical activity. Everyone wants a good life and the main goal of all is the happiness in life. Everyone should follow good health practices in their routine life. Minor health disorders are more common in all of them. In the case of major health problems, there are many precautionary measures. Some people control their illnesses such as high blood pressure, diabetes, acidity, asthma etc. by taking the medication regularly. However, such practices do not completely eliminate the effects of health problems, which in turn have led to various health problems. Regular and regular exercise strengthens the immune system, and helps prevent comorbid conditions such as heart disease. It also improves mental health and helps prevent depression.

2. Calisthenics

Calisthenic was invented in antiquated Greece and connected to Greco-Roman gymnastics. The word calisthenics originates from the Greek words "kallos" for beauty and "thenos" for strength. Calisthenics is a sort of action comprising of variety actions without utilization of hardware or mechanical assembly, but with utilizing individual's own body weight. It is planned to expand body quality and adaptability with developments, for example, bowing, bouncing, swinging, turning or kicking; using just individual's own body weight as resistance. Calisthenics are vigorous and dynamic activities and are reasonable for inactive and furthermore for more experienced individuals. They are musical, smooth, pleasant activities that are easy to do by yourself or in a gathering design, and can be adjusted by individual's wellness level. Calisthenics comprise of an assortment of basic actions that are expected to enhance body quality and adaptability utilizing the individual's own body weight as resistance. Calisthenics exercise- based fitness training program can create both muscular endurance and cardio-vascular endurance in expansion to enhancing psychomotor aptitudes for example neuro-muscular coordination, balance and agility. Calisthenics workout can be valuable for muscular endurance and cardiovascular endurance.

3. Objectives of the study:

This study is proposed to accomplish the following objectives:

1. To see the effect of 3 months calisthenic exercises training program on shoulder strength. of school girl between the control and experimental group after treatment.
2. To see the effect of 3 months calisthenic exercises training program on shoulder strength. of school girl between the control and experimental group after treatment.
3. To see the effect of 3 months calisthenic exercises training program on shoulder strength. of school girl in the experimental group after treatment.
4. To see the effect of 3 months calisthenic exercises training program on shoulder strength. of school girl in the experimental group after treatment.

4. Hypotheses:

On the basis of related literature and researcher's own understanding of the research problem it is hypothesized that:

1. It was hypothesized that there will be significant difference in the shoulder strength of school girl between the control and experimental group after treatment.
2. It was hypothesized that there will be significant difference in the abdominal endurance of school girl between the control and experimental group after treatment.
3. It was hypothesized that there will be significant improvements in the shoulder strength of school girl in the experimental group after treatment.
4. It was hypothesized that there will be significant improvements in the abdominal endurance of school girl between in the experimental group after treatment.

5. Delimitation of the study:

- Only 60 fresh girl students between the age group of 14-17 years from the Tagore Public School, Kaithal, Haryana state were selected randomly for this study.
- These 60 subjects were equally separated into two groups i.e. calisthenics experimental and control groups.
- Only selected physical fitness variables i.e. shoulder strength and abdominal endurance were tested in this study.
- Only selected calisthenic exercises were included in the calisthenics training program.
- The calisthenic exercises training program was provided to the experimental group for three months in the morning session except Sunday for sixty minutes.

6. Limitation of the study:

- The life style, home environment, daily routine and food habits of subjects could not be controlled.
- Religion, caste and creed were out of control of the investigator.
- Urban and rural criteria to select the sample were not considered.
- Weight, height criteria were also not considered in the study.
- Diet habits and socio-economic status were also out of control of the researcher.
- Weather conditions were also not in the control of researcher.
- Any disorders of subjects were out of control of the investigator.
- Mental, emotional & intellectual state of the subjects were unable to control by researcher.
- Home environment of the subjects was not possible to control.
- Activities of the control group could not be controlled by the researcher.

7. Review of literature

Ewan Thomas & Antonino Bianco (2017), the purpose of this study was to see the impact of8 weeks calisthenics training on postural, strength and body composition improvements. To accomplish the reason for present research 28 male members (24.2 ± 4.2 years; 67± 8.3 kg; 173.30 ± 5.20 cm) were selected and partitioned into two groups equally, calisthenics exercise-based cluster (experimental group) and a control group. The experimental group went through calisthenics exercise for two months while control group did not do any specific physical training. Every member experienced an examination of body, a postural assessment, a driving test and a push-up test. Every member was assessed before the start and after the end of training program. The experimental group enhanced his stance (with eyes open $p < 0.001$ and with eyes shut $p < 0.05$), his quality (push test $p < 0.01$ with an expansion of 16.4% and push test $p < 0.0001$ with an increment 39.2%) and its body structure (fat mass14.8 ± 5.1 versus 11.4 ± 5.9, $p < 0.01$). No distinction was appeared for the manual hold test. There were no noteworthy contrasts in any variable in control group. Calisthenic exercises is a potential and successful training method for improve stance, quality and body composition without utilization of any tool.

Santoshi (2010), the aim of the present study was to obtain the results of calisthenics and yogic exercise on selected physical and physiological modifications. The study was conducted on 120 randomly selected male students at Yogashastra College. Based on their initial performance they were divided into four groups. Group-Exercise group for calisthenics only, a group working with yogaasanas only, an integrated group of Group-C (calisthenics groups and yoga asanas), a control group of Group-D (who did not continue treatment). Their ages ranged between 18 and 22 years. Pre- and post-test scores for all four groups were taken. After analysis of the data collected on all types of fitness it was revealed that no significant differences were found between the pre- and post-cohort numbers of the calisthenics group. Significant statistical differences were found between a number of pre- and post-test groups included in muscle endurance while no significant differences were found in speed. No significant differences were found between pre- and post-test control group tests in any of these physical strengths.

8. Methodology

For the accomplish the aim of this study, 60 girl students were taken randomly as samples from Tagore Public School, Kaithal, Haryana. They were separated into two equal groups as calisthenics training experimental and control groups. The ages of subjects were ranged from 14-17 years. Calisthenic experimental group were given treatment of the calisthenic training program for 60 minutes six days in a week except Sunday in the morning session for 3 months and control group was instructed to not to perform any type of specific physical training. In this study, physical fitness variables i.e. shoulder strength and abdominal endurance were selected to see the effect of calisthenics training program on them. The data was collected of all the samples before starting and after completion of the training program. Shoulder strength were

measured with flexed arm hang test and abdominal endurance were measured with flexed legs sit-ups test **(**AAHPER youth fitness test manual, Paul Hunsicker and Guy G. Reiff, revised edition,1976). To see the substantial variance in control and calisthenic exercises experimental groups after the treatment statistical technique 't' test was used.

9. Analysis and interpretation of the data

Comparison of control group (post) and calisthenics experimental group (post) score

Shoulder Strength

Table-1 (a)

Statistics	Control Group	Calisthenics Group
N	30	30
Mean	3.80	17.03
SD	2.091	6.851

Table-1 (b)
Comparison of the two groups using 't' test

Group	SED	DF	't' value
Control Group	.382	58	*10.120
Calisthenics Group	1.251		

*Significance at 0.05 level (P <0.05)

Table-1 displays mean, standard deviation and standard error deviation of post-test data gathered from calisthenics experimental and control group on shoulder strength. The gathered data was statistically evaluated by use of 't'- test to search noteworthy difference amid calisthenics experimental and control groups post-test. The gained 't' value is 10.120 which is more than the essential table value of 1.6715 with df 58 at 0.05 level. It is seen that noteworthy difference exists amid calisthenics experimental and control group post-test on shoulder strength. Mean value of calisthenics experimental group is more than control group as a result of training program. Thus, calisthenic exercises have positive effect on shoulder strength of calisthenics experimental group. Hence, hypothesis no. 1 is accepted.

Abdominal Endurance

Table-2 (a)

Statistics	Control Group	Calisthenics Group
N	30	30
Mean	7.3000	25.3000
SD	2.98444	6.17084

Table-2 (b)
Comparison of the two groups using 't' test

Group	SED	DF	't' value
Control Group	.54488	58	*14.383
Calisthenics Group	1.12664		

*Significance at 0.05 level (P <0.05)

Table-2 illustrates mean, standard deviation and standard error deviation of post-test data gathered from calisthenics experimental and control group on abdominal endurance. The gathered data was statistically evaluated by using 't'- test to discover noteworthy difference amid calisthenics experimental and control group post-test mean. The acquired 't' value is 14.383 which is superior than essential table value of 1.6715 with df 58 at 0.05 level. It is perceived that noteworthy difference exists amid calisthenics experimental and control group post-test on abdominal endurance. Mean value of calisthenics experimental group is superior than control group cause of training program Thus, calisthenic exercises have positive outcome in muscular endurance of calisthenics experimental group. Hence, hypothesis no. 2 is accepted.

Comparison of calisthenics experimental group (pre) and calisthenics experimental group (post) score

Shoulder strength

Table-3 (a)

Statistics	Pre-test	Post-test
N	30	30
Mean	4.03	17.03
SD	2.810	6.851

Table-3 (b)
Comparison of the two groups using 't' test

Group	SED	DF	't' value
Pre-test	.513	58	*-9.616
Post-test	1.251		

*Significant at 0.05 level (P <0.05)

Table-3 presents mean, standard deviation and standard error deviation of pre and post-test data taken from calisthenics experimental groups on shoulder strength. The gathered data was statistically evaluated by using 't'- test to discover noteworthy difference amid pre and post-test means. The gained 't' value of calisthenics experimental group is -9.616 which is superior than essential table value of 1.6715 with df 58 at 0.05 level. That is why it shows noteworthy difference amid pre and post-test means of calisthenics experimental group on shoulder strength. The mean score of calisthenics experimental group post-test is larger than pre-test due to training program. Thus, calisthenic exercises have developmental effect on shoulder strength. Hence, hypothesis no. 3 is accepted.

Abdominal Endurance

Table-4 (a)

Statistics	Pre-test	Post-test
N	30	30
Mean	8.70	25.30
SD	4.087	6.171

Table-4 (b)
Comparison of the two groups using 't' test

Group	SED	DF	't' value
Pre-test	.746	58	*-12.285
Post-test	1.127		

*Significant at 0.05 level (P <0.05)

Table-4 illustrates mean, standard deviation and standard error deviation of pre and post-tests data gathered from

calisthenics experimental group on abdominal endurance. The gathered data was statistically evaluated with 't'- test to see the noteworthy difference amid pre and post-test means. The obtained 't' value of calisthenics experimental group is -12.285 which is superior than essential table value of 1.6715 with df 58 at 0.05 level. It is found that noteworthy difference exists amid pre and post-test means of calisthenics experimental groups on abdominal endurance. The mean score of calisthenics experimental group post-test is larger than pre-test due to training program. Thus, calisthenic exercises have positive effect on abdominal endurance. Therefore, hypothesis no. 4is accepted.

10. Discussion on findings

1. The analysis of data with t-test exposed that there is noteworthy change in shoulder strength in calisthenics experimental group after 3 months calisthenics training program while control group did not show substantial variance. Thus, calisthenics training program improves shoulder strength.
2. The evaluation of data by using t-test exposed that there is substantial variance in the abdominal endurance in calisthenics experimental group after 3 months calisthenics training program while control group did not produce noteworthy change. So, calisthenics training program improves the abdominal endurance.
3. The analysis of data with t-test showed that there is noteworthy variance between pre and post-test data of calisthenics experimental group in shoulder strength. Thus, calisthenics training program improves shoulder strength.
4. The analysis of the data applying t-test exhibited that there is substantial change between pre and post-test data of calisthenics experimental group in abdominal endurance. Therefore, calisthenics training program improves abdominal endurance.

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