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Effect of circuit training program on selected motor abilities among university male

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Abstract

The purpose of present study was to find out the effect of circuit training on selected motor abilities among university male students. For the purpose of the study total 60 boys, age ranged from 18 to 25 years were selected as subjects from the Department of Physical Education (T), Guru Nanak Dev University, Amritsar, Punjab (India). The subjects were purposively divided into two groups: Group-A: Experimental (N1=30) and Group-B: Control (N2=30). All the subjects were informed about the aim and methodology of the study. The subjects from Group-A were subjected to 8-week of Circuit Training Program. Group-B acted as control who did not participate any special training apart from the regular curricular activities. The training program starts with warm up exercises for 10 minutes (jogging, slow space running, stretching exercises etc.), then Sit ups (lower abdominals), pushups, Squat jumps, Compass jumps, Astride jumps, Shuttle runs were selected for the main training schedule. Volume and intensity: Experimental group performed 20 to 30seconds work on each exercise with a 20 to 30 seconds recovery. They performed 2 to 4 sets with a 2 to 3 minutes recovery between each set. T-test was used to find out the statistical significances of each age groups pre and post mean differences. The level of significance was set at $p<0.05$ level of confidence. The results of the study stated that the Circuit Training had significantly improved the speed, leg power, arm power and agility of the subjects.

Keywords: Circuit training, motor abilities, volume, intensity

1. Introduction

Physical education is all about skill acquisition as most of the “education through physical” takes place by means of specialized skills of games and sports, athlete, gymnastics, dance etc. These specialized skills may be defined as those physical activities constituting each sport that are distinctive to that sport like motor capacity (innate ability) motor educability (ability to acquire new behavior), motor capacity (acquired or innate ability to perform movement skills). Motor ability has been defined as the present acquired and innate ability to perform motor skills of a general and fundamental nature. Traditionally, it has been viewed as a combination of factors that are basic to all movements involving such elements of physical fitness as strength, speed, agility, flexibility and so on. The early researchers defined motor ability as “general physical efficiency (M.C Cloys), “the level to which one has developed his innate capacity to learn more skill” (Cozens)” the immediate capacity of an individual to perform various stunts or many athletics events. Significantly, people differ in ability they possess. For this reason, motor abilities, as capacity indicate limits that influence the person’s potential for performance achievement in skills. There are reasons for people to differ in motor abilities. According to one explanation abilities are genetically determined. That is, individuals are born with these characteristics the second explanation maintains that individuals develop these abilities through non-genetic factors, such as experience – the most predominant non-genetic factors. Undoubtedly, athletic competition requires fitness beyond that necessary for optimal health. But the value of specific motor abilities test items to athletes and coaches, and the use that can be made of data collected, have been much debated (Gollnick and Mataba, 1984, Noakes, 1988). Obviously, they will take different approaches depending on whether the goal is to evaluate health fitness to assess fitness for successful athletic participation, or to research the response of the human body to varied exercise intensities and regimes. A motor skill is a function, which involves the precise movement of muscles with the intent to perform a specific activity. Most purposeful movement requires the ability to perceive or sense what one’s muscles are doing as they perform the act.

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2. Methodology

For the purpose of present study, total sixty (60) male subjects, age ranged from 18 to 25 years were selected as subjects from the Department of Physical Education (T), Guru Nanak Dev University, Amritsar, Punjab (India). The subjects were purposively divided into two groups: Group-A: Experimental (N1=30) and Group-B: Control (N2=30). All the subjects were informed about the aim and methodology of the study. Exercise schedule: The duration of the training was eight weeks. The training program was consists of warm up exercise for 10 munitities (jogging, slow space running, stretching exercises etc.), circuit training exercise of core and trunk and lower and upper body, cool down exercises. Sit ups (lower abdominals), pushups, Squat jumps, Compass jumps, astride jumps, Shuttle runs were selected for the main training schedule. Experimental group performed 25 to 35 seconds work on each exercise with a 20 to 30 seconds recovery. They performed 2 to 4 sets with a 2 to 3minutes recovery between each set. The training program was conducted three days in a week of two months. Various Tests by Johnson and Nelson

(1982) was used to assess motor fitness components as described below:

Table 1: of Motor Fitness Components and Test

S. No	Motor Fitness Components	Test
1	Speed	50- Yard Dash Run
2	Arm Power	Two Hand Medicine Ball Put
3	Leg Power	Standing Broad Jump
4	Agility	Shuttle Run

3. Statistical Analysis

The data collected in the study was subjected to statistical analysis with appropriate use of SPSS package. Central tendency was judged by calculating mean and variability was assessed by standard deviation. T-test was used to find out the statistical significances of each age groups pre and post mean differences. The level of significance was set at $p < 0.05$ level of confidence.

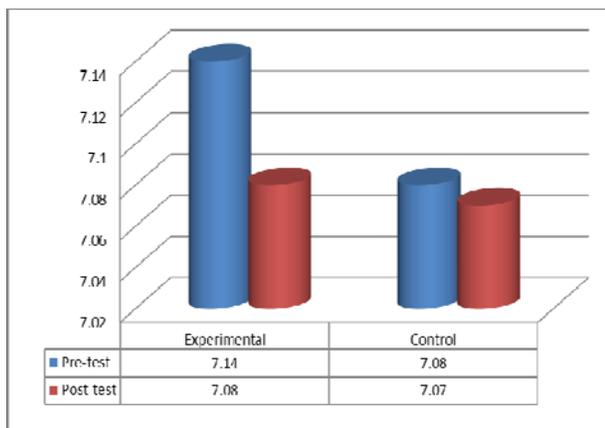
4. Result and Discussion

Table 2: Descriptive Statistics of Selected Variables of University Level Boys

S. No	Variables	Group	Pre-test		Post-test		T- Test
			Mean	S.D	Mean	S.D	
1	SPEED (in secs)	Experimental	7.14	0.0682	7.08	0.0983	6.2032*
		Control	7.08	0.066	7.07	0.074	0.75
2	ARM POWER (in mtrs)	Experimental	3.12	0.1640	3.20	0.0730	4.2731
		Control	3.07	0.13	3.09	0.11	1.4
3	LEG POWER (in mtrs)	Experimental	2.12	0.0626	2.25	0.0628	8.2775*
		Control	2.02	.0657	2.04	.0694	1.26
4	AGILITY (in secs)	Experimental	11.14	0.1273	11.04	0.1291	4.0936*
		Control	11.16	0.016	11.14	0.099	1.46

*Significant at 0.05 level, Degree of freedom=29

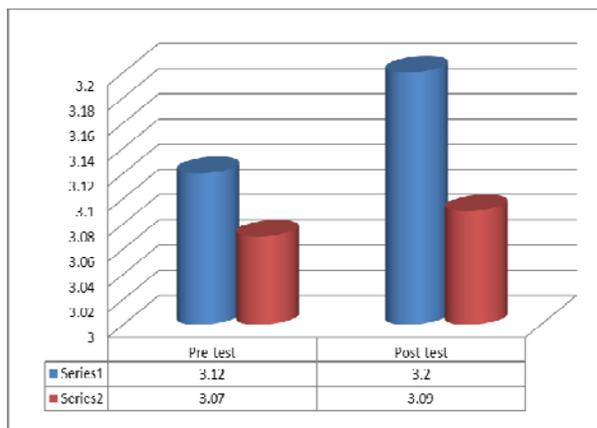
4.1 Speed



Graph 1

Graph- 1 presents the results of experimental group and the control group with regard to the variable speed. The descriptive statistics shows the Mean and SD values of speed of pre test and posttest of experimental group was 7.14 ± 0.0682 and 7.08 ± 0.0983 respectively, whereas, the Mean and SD values of speed of pre-test and post-test of control group was 7.08 ± 0.066 and 7.07 ± 0.074 . The “t” value in case of experimental group was 6.2032^* and for control group it was 0.75 . The “t”-value in case of experimental group 6.2032^* as shown in the table above was found statistically significant.

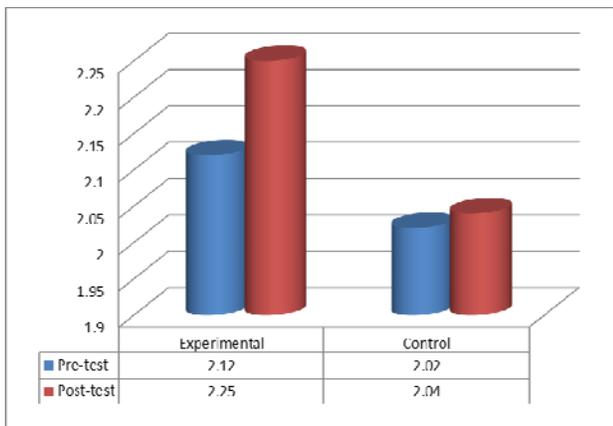
4.2 ARM power



Graph 2

Graph- 2 presents the results of experimental group and the control group with regard to the variable arm power. The descriptive statistics shows the Mean and SD values of arm power of pre test and post test of experimental group was 3.12 ± 0.1640 and 3.20 ± 0.0730 respectively, whereas, the Mean and SD values of arm power of pre-test and post-test of control group was 3.07 ± 0.13 and 3.09 ± 0.11 . The “t” value in case of experimental group was 4.2731^* and for control group it was 1.4 . The “t”-value in case of experimental group 4.2731^* as shown in the table above was found statistically significant.

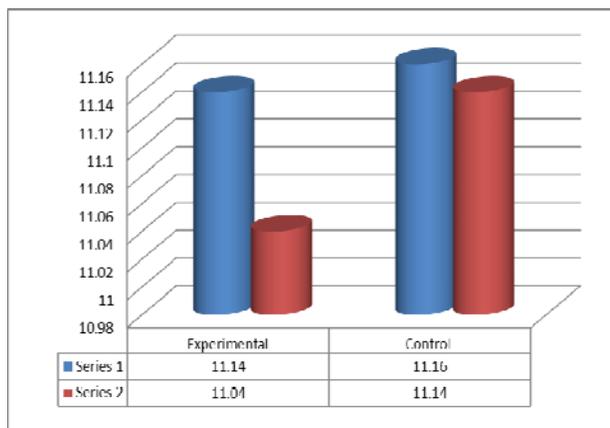
4.3 Leg Power



Graph 3

Graph- 3 presents the results of experimental group and the control group with regard to the variable leg power. The descriptive statistics shows the Mean and SD values of leg power of pre test and post test of experimental group was 2.12 ± 0.0626 and 2.25 ± 0.0628 respectively, whereas, the Mean and SD values of leg power of pre-test and post-test of control group was 2.02 ± 0.0657 and 2.04 ± 0.0694 . The “t” value in case of experimental group was 8.2775^* and for control group it was 1.26. The ‘t’-value in case of experimental group 8.2775^* as shown in the table above was found statistically significant.

4.4 Agility



Graph 4

Graph- 4 presents the results of experimental group and the control group with regard to the variable agility. The descriptive statistics shows the Mean and SD values of agility of pre test and post test of experimental group of pre test and post test of experimental group was 11.14 ± 0.1273 and 11.04 ± 0.1291 respectively, whereas, the Mean and SD values of agility of pre-test and post-test of control group was 11.16 ± 0.016 and 11.14 ± 0.099 . The “t” value in case of experimental group was 4.0936^* and for control group it was 1.46. The ‘t’-value in case of experimental group 4.0936^* as shown in the table above was found statistically significant.

5. Conclusion

The researcher analyzed the collected data as per the purpose of study. The statistical analysis of the study stated that the Circuit Training had significantly improved the speed, leg power, arm power and agility of subjects. Similar results were

founded in the study carried out by Dr. M. Suresh Kumar (2014) [5] Influence of Circuit Training on Selected Physical Fitness Variables among Men Hockey Players Significant improvement was founded for Speed, Agility, and Explosive Strength. The results are also in conformity with the study carried out by Dr. Saugata sarkar (2013) [2] Effect of Circuit Training Program on Explosive Strength and Strength Endurance of School Going Students. Significant improvement was founded for Explosive strength and strength endurance. So it is concluded that motor abilities can be improved by circuit training. But training should be systematic, planned and scientific.

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