



EFFECT OF CIRCUIT RESISTANCE TRAINING ON SELECTED PHYSICAL FITNESS COMPONENTS AND PHYSIOLOGICAL VARIABLES AMONG SEDENTARY MALES

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ABSTRACT

The objective of this study was to determine the effect of circuit resistance training on selected physical fitness components and physiological variables among sedentary males. For these investigation 60 physically untrained men were randomly classified two equal groups namely control and experimental group 30 subject each and their ages ranged between 20 and 30 years. The physical variables selected for this study were isotonic strength (Bench Press) & (Half Squat) and Physiological variables were Aerobic capacity, Blood pressure, Systolic blood pressure, Diastolic blood pressure. The treatment was applied to the experimental group and were administrated a circuit resistance training programme, the control group did not participate in any kind of training programme. The pre test and post test were conducted before and after the experimental treatment. The experimental group underwent a training programme for ten weeks, three day in week, one session per day and each session last for about one hour thirty minutes. To find out significant difference between initial and final means of experimental group and control group in selected physiological variables 't' test was employed. Analysis of the data revealed that there were significant change in physiological variable of physically untrained men also underwent 10 week of circuit resistance training programme. While in the case of control group there were no change seen in the selected physiological variables.

KEYWORDS: Circuit Resistance, Physical, Physiological, Sedentary.

INTRODUCTION

People today experienced more changes and crisis than any other generation advance in activity. Men and women who have learned good fitness habits and who have developed positive attitude towards activity will be better able to live productive lives. They contribute more to society and cost society less in terms of mental and physical health care and social problem Rink (1984) modern technology has enabled our present day society to exist in a world where the concept of hard or even moderate physical work is almost absolute. We are constantly looking for way to make life even easier that is from the view point of conserving effort and human energy. Such common and serious medical problem as coronary heart diseases, hypertension, and obesity or indirectly associated with lack of physical activity.

Physical activity positively influences physical and psycho-social health. During adolescence, intensity often increases which results in more physical risks but also counters developing cardiac risk factors. In adult life, benefits shift to the prevention of work loss and premature death from chronic disease. Finally old age, an exercise conserves function and improves the quality of life. (Shephard 1995).

Most of the physical activity programme intended to develop and improve fitness and incorporate strength Training is systematic means of adding resistance to various exercises. In simplest term, strength training is systematic means of adding resistance to various exercises movement of course in order to handle greater

resistance; positive adoption must to be place within the musculoskeletal system. (Westcott 1991)

METHODOLOGY

SELECTION OF SUBJECT

The investigation selected 60 physically untrained men between the age group of 20 to 30 from Health club 30 of them were assigned to the experimental group and the rest 30 acted as control group .These subjects were involve in recreational activities did not undergo any organized physical training programme in the past. The subjects were briefed about the purpose and significance of the study in the presence of physical instructors of the Health club .all the subject agreed to undergo the resting and training programmes .The subject thoroughly acquitted with the testing procedure .The training schedule was explained to group to that there was to ambiguity regarding the effort that was required on their part and the hardship they might endure.

The treatment were applied to the experimental group and were administrated a circuit resistance training programme, the control group continued attending their normal work but did not participate in any kind of training programme.

COLLECTION OF DATA

The data pertaining to selected physiological variables such as aerobic capacity anaerobic power,

blood pressure, heart rate and isotonic strength were collected by administering the appropriate test and measurement procedures. The apparatus and procedures were explained prior to the administration of the tests.

TRAINING PROGRAM

The experimental group underwent a training programme for 10 week in first four week subject performs one rotation of circuit training for the first few days subject showed some uneasiness, then slowly got conditioned to the resistance given In second four week subject were able to perform two rotations of training with much resistance. It considered at a series of weight resistance exercises performed in succession with a rest period of 15 to 20 sec between the each about of work which lasted 30 to 60 seconds such exercise considered of 10 to 20 repetition with a resistance of 40-70% of the total heart rate of the individual of the individuals one repetition maximum for that exercise circuit consist of 10 exercise station required 30 to 1 min to complete. The circuit included exercises both for upper and lower body

the upper and lower body will be worked out on alternate days. The training programme started with proper warming up for 5 min and ended with 5 minutes of cool down exercise and stretching. The exercise 'station' is as following.

STATISTICAL

To find out significant difference between initial and final means of experimental group and control group in selected physiological variables it 't' test was employed.

ANALYSIS OF DATA

The statistical analysis of the data is presented in this chapter the data collected on, anaerobic capacity ,power Heart rate , Blood pressure, (systolic and Diastolic) and isotonic strength (Bent press and Half squat) were analyzed by applying 't' test to find out significant difference. If any between the pre test and post test means. The level of significance to asset the 't' ratio was set at 0.05 level of confidence.

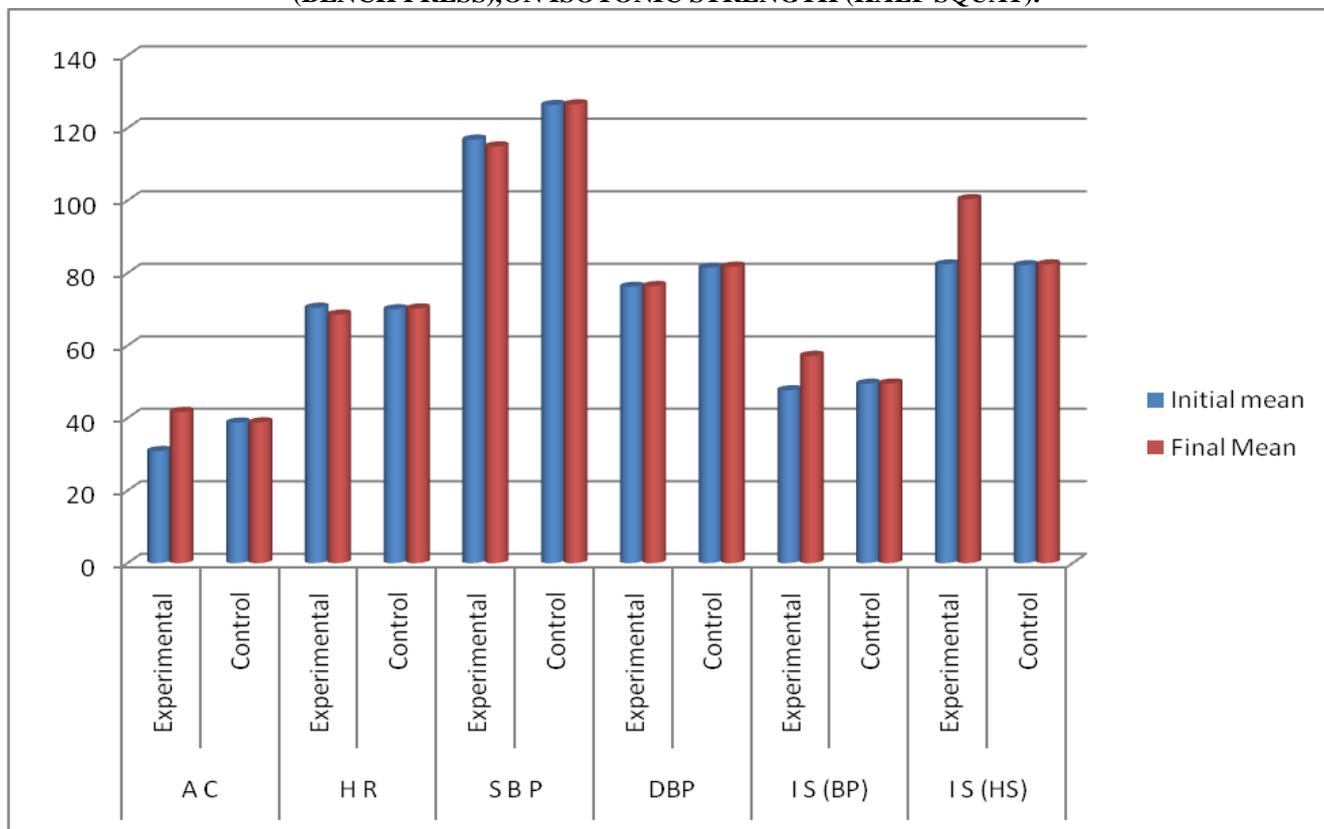
TABLE I
DIFFERENCE OF MEAN OF EXPERIMENTAL & CONTROL GROUP IN AEROBIC CAPACITY, RESTING HEART RATE, SYSTOLIC BLOOD PRESSURE , DIASTOLIC BLOOD PRESSURE ,ISOTONIC STRENGTH (BENCH PRESS),ON ISOTONIC STRENGTH (HALF SQUAT).

Variable	Group	no.	Initial mean	Final Mean	Mean Difference	S.E	"t" test
Aerobic Capacity	Experimental	30	30.9	41.7	2.8	0.242	11.59 **
	Control	30	38.73	38.8	0.066	0.179	0.37
Heart Rate(in no.)	Experimental	30	70.433	68.533	1.9	0.297	6.40**
	Control	30	70	70.23	0.23	0.171	1.37
Systolic Blood Pressure (in mm hg)	Experimental	30	116.8	114.933	1.868	0.507	3.68**
	Control	30	126.353	126.533	0.2	0.242	0.83
Diastolic Blood Pressure	Experimental	30	76.2	76.4	0.8	0.354	2.026**
	Control	30	81.467	81.7633	0.267	0.159	1.68
Isotonic Strength (Bench Press)	Experimental	30	47.675	57.163	9.542	0.56	17.04**
	Control	30	49.453	49.513	0.06	0.188	0.32
Isotonic Strength (Half Squat)	Experimental	30	82.371	100.39	18.019	1.083	16.64**
	Control	30	82.147	82.376	0.229	0.3	1.096

*Significant at 0.01 level of confidence

't' Value needed for significance at 0.05 levels with 29 degrees of freedom is 2.055 and at 0.01 level is 2.756.

FIGURE I
DIFFERENCE OF MEAN OF EXPERIMENTAL & CONTROL GROUP IN AEROBIC CAPACITY, RESTING HEART RATE, SYSTOLIC BLOOD PRESSURE, DIASTOLIC BLOOD PRESSURE, ISOTONIC STRENGTH (BENCH PRESS),ON ISOTONIC STRENGTH (HALF SQUAT).



FINDING

Analysis of the fatal revealed that there were significant change in physiological variable of physically untrained men also underwent 10 week of circuit resist training Programme. While in the case of control group there were no change seen in the selected physiological variables.

The experimental group improved in their aerobic capacity after the 10 week of circuit resistance training Programme. The trainees initially had difficult in keeping pace with the schedule of training, but after weeks most of them got adjusted. There, getting adjusted to the programme itself is considered a sign of improvement in aerobic capacity. It may be because of the combined effect of factor like muscular strength muscular endurance and efficiency of the cardio and respiratory functions.

The Control group showed no improvement in aerobic capacity. The trainees showed to the fact that as the muscle in exercised, there is an increase in the lean body mass and consequently more anaerobic development of the muscle.

The control group showed no significant change in anaerobic capacity.

The experimental group showed a significant decrease in their resting Heart rate. This may be due to an improvement in their cardio – vascular fitness

enabling and to meet the body's requirements in lesser number of beats.

The control group showed no change in resting Heart rate.

The resting systolic blood pressure and Diastolic blood pressure decreased in experimental group. This finding is in conformity with Hurley et al., Harris and hally and Quiocho.

The control group did not show difference in their systolic and diastolic blood pressure.

The isotonic training measured through Bench press and half squat an improvement in the experimental group. The increases in isotonic strength may be due to an improvement increases in isotonic strength may be due to an improvement in muscular strength occurring due to an increase in muscle mass and contractile nature of the muscle. This finding is in basis agreement with Crabtree and Nagidgadeh.

The control group showed no improvement in their isotonic strength.

The Hypothesis stated earlier has been accepted as there were significant changes in selected physiological variables due to 10 weeks of participation in circuit training programme.

CONCLUSION

Circuit training is a form of progressive

resistance by which is a widely used and proven method to improving muscular endurance but which depending on the nature of the circuit by 't' the choice of exercises has also been show to produce positive change in muscular strength. The method normally employs a circuit arrangement of exercise which permits progression from one station to another. Circuit training can take place in a variety of location it allow a large no of person to brain in a relatively space Crex Hayeline, (1990).

The subject for the study was 60 physically untrained men in the 20-30 years from Trivandrum Health club, 30 subjects each were assigned to experimental and control group. The experimental group regularly participated in the circuit resistance by programme six day in week which involved 10 exercise stations. The training programme consisted of a series of resistance exercise performed in succession with a rest period of 15 to 30 between each bout of work which lasted 30 to 60 min (seconds). Each exercises consisted of 10 - 20 repetition with a resistance of 40-60% of the individual one repetition maximum (IRM) for that exercise.

The test item selected for testing were forestry step test to measure aerobic capacity, resting heart rate, Resting blood pressure, (Diastolic and systolic) and Isotonic strength (bench press and Half squat). The programme was formulated in consultation with the experts in the field of physical education.

The data for the study was calculated before and after 10 weeks of participation in the training Programme. From the experimental and control group.

The significant of mean difference between the pre test and post test scores in all the variables were analysed by employing 't' test. The level of significant to asses 't' ratio was let at 0.05 level of confidence. It is evident from the analysis of data that the subject assigned to experimental group, have shown significant changes in all physiological variables aerobic capacity, anaerobic power, resting Heart rate, resting systolic Blood pressure, Resting diastolic Blood pressure, isotonic(bench press) and isotonic(Half squat). The control group did not show significant changes in any physiological variables.

Within the limitation of the present study, the following conclusion were drawn 10 weeks, circuit resistance training programme improved aerobic capacity, in untrained males.

(i) Resting Heart Rate was decreased as a result of participation in 10 weeks of circuit resistance training Programme. (ii) Participation in a circuit Resistance Training programme brought about a decrease in Systolic and diastolic blood pressure in untrained males. (iii) Isotonic strength of untrained males, measured through (IRM) bench press and half squat improved as a result of 10 weeks Circuit resistance training Programme.

REFERENCE

1. Adams's, gen.M, (1984) Exercise Physiology laborator, Manial 2nd ed. USA, WMC. Brown Publishers,.
2. Alber. T.E. & Byrd R.J. Hemodynamic, (1979) Consequence of circuit "Research Quarterly 43 .pp299-306.
3. Alexander P.M. (1985),The effect of an eight week strength programme on strength, anaerobic power and anaerobic capacity completed Research in Health Physical Education and Reaction 20:30.
4. Baechle, Thomas.R.K.Groves, & Barney.R, (1992) Weight training step to success. Champaign, Leisure Dress..
5. Beneratis, Training effect of upper body circuit training programme on heart rate on uptake Computer research in Health physical education and recreation.
6. Berger, Richard. A, (1992) Introduction to weight training 2nd ed, New Jersey, Prentice Hall inc.
7. Bowers, Richard.W & Fox, Edward. L. (1992) Sports physiology 3rd, USA, WM.C.Brown Publishers.
8. Corbin, Charles. B & Lindsey, Ruth, (1991.)Concept of Physical Fitness with Reboratories, 7th ed. USA, WM.C. Brown Publisher,
9. Hayendine Rex (1990), Strength by for sports, Wiltshira The Crowood Press Ltd.
10. Joshtaty, Wilson & Bradle. R.A. (1993), The effects of a six week low intensity nantilus circuits by programme on testing blood pressure and strength in females. The journal of sports medicine and physical fitness 32:299.
11. Naghibzgdten. M.S. (1987), The effect of circuit by an aerobic capacity and strength. Completed research in Health, Physical education and Recreation 30:49.
12. Pate Ressel.R. (Dec. 1995) ,Dose Response issues "Research Quarterly 4:313
13. Patterson.Lombardi.V.(1989)Beginning Weight Training. USA WM.C. Brown publisher.
14. Plyley Michael J. (1994), Physiological Response to circuit resistance training Canadian Journal of sports sciences 14, 3:158.
15. Toley, M.E. (1986), The effect of an aerobic circuit training Programming on predicted maximal O₂ update of pre pubescent Children 29:117.
16. Wescott, Wayhe. (1991) Strength fitness, 3rd ed, USA WM.C. Brown publishers.