Effect of Resistance Circuit Training and Intensive Interval Training on Vital Capacity of Veer Narmad South Gujarat University Kho-Kho Players

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Abstract :
The purpose of this research study was Effect of Resistance Circuit Training and Intensive Interval Training on Vital Capacity of Veer Narmad South Gujarat University Kho-Kho Players Male players of Kho-Kho selected at school level in Veer Narmad South Gujarat University District were selected in the present study. Total 90 male players were selected as subjects for the sample of the present study, in which 30 players were included in the Resistance Circuit training group, 30 in Intensive Interval training group and 30 players were included in the control group. The male players of 13 to 17 years age group were included in the present study. In this research study vital capacity was measured by peak flow meter. Statistical technique such as analysis of covariance was applied to know the effects on Resistance Circuit training group and Intensive Interval training group. Mean difference was examined at 0.05 levels by using Least Significant Difference (Post Hoc) Test. The conclusion of which was seen as follows. Remarkable improvement was found in Vital Capacity of selected subjects by 12 weeks systematic Resistance Circuit training and Intensive Interval training programmes.

Introduction :
Circuit training stations are generally sequenced in a way to alternate between muscle groups, which allows for adequate recovery. The rest interval between stations should be between 30-90 seconds and 1-3 minutes between circuits. A typical gym has several strength training machines and workstations, which enables the creation of several circuits. This benefit of variability challenges the skills of the participant and keeps them interested from session to session.
Circuit training plays an integral role in the offseason workouts of many professional athletes. It serves as a way to maintain general fitness while avoiding the high physical demands of in-season sport. Circuit training also serves as a segue to higher level strengthening programs in these athletes.
Circuit training consists of performing multiple exercises on multiple body parts in a row with little rest in between exertions. The two most basic types of circuit training are horizontal training and vertical training. In horizontal training, all sets of one exercise are performed before a person moves on to the next exercise. In vertical training, one set of every different type of exercise is performed before returning to an exercise for the second time.
The amount of weight that a person lifts during a circuit training session can vary between sets. A person can start with light weights and work up to heavier weights (increasing pyramid) or can start with heavy weights and regress to lighter weights (decreasing pyramid). The most important component of circuit training is to take little rest in between sets, whether of the same or different exercises.
Due to the lack of rest that circuit training demands, exercisers maintain elevated heart rates for the entire period of exercise. The combination of weight training and increased cardiovascular effort makes circuit training a beneficial type of cross training. The exerciser gains muscle through the resistance training. The exerciser increases his/her cardiovascular endurance during the slightly elevated heart rate that is maintained in between sets and throughout the overall program. The exerciser bums high amounts of calories during the high exertion periods of his/her sets.
Circuit training is also a convenient way to exercise. It maximizes the total exercise volume (number of sets, repetitions, and amount of weight) completed in a period of time. Exercises are completed in a row, and therefore, the time spent exercising is condensed. Separate cardiovascular training is not necessary. All body parts are trained in one session, and therefore, exercisers do not need to work out everyday.
Interval training was first introduced in the 1950s as a higher intensity form called sprint interval training, which reached 100% maximum heart rate and was used to improve the performance of elite Olympic athletes. Body weight can be used as the main form of resistance so that additional equipment is not needed.
Our body needs energy and heat. In order to maintain the energy and heat of the body, the burning process of pineapple continues in every tissue. The combustion of pineapple in the tissue takes place in the presence of oxygen. As we breathe in, oxygen accumulates in the blood cells in the lungs. That oxygen is combusted by the blood cells along with

the carbon and hydrogen in the pineapple and thereby generates energy and heat in the body. Carbon dioxide and water are produced in the body due to combustion in the tissues. We breathe it out. Thus we need breathing.
The lungs are covered in the cavity on both sides of our chest. Lungs are bluish inwardly perforated, elastic and black-brown in color. The shape of the lungs is cone-like. There are two parts of the lungs namely right lung and left lung. The right lung is larger than the left lung. The right lung has three lobes and the left lung has two lobes. Each lung has two layers. It is called pleura. One layer is attached to the lungs and the other is the lining of the chest cavity. An oily substance leaks between the two layers of the lungs. Due to this oily substance, even though pressure is exerted on both layers due to respiration, the two do not rub against each other and the lungs can slide without rubbing against the chest wall. Each lung has a breathing vessel. Each lung is lined with tiny bronchioles and air cells. Air-cell membranes are very thin. There are networks of capillaries around the air cells, air cells are also called air spheres. Its shape looks like a grape cluster.

Purpose of the Study :
The purpose of this research study was Effect of Resistance Circuit Training and Intensive Interval Training on Vital Capacity of Veer Narmad South Gujarat University Kho-Kho Players

Selection of Subjects :
Male players of Kho-Kho selected at school level in Veer Narmad South Gujarat University District were selected in the present study. Total 90 male players were selected as subjects for the sample of the present study, in which 30 players were included in the Resistance Circuit training group, 30 in Intensive Interval training group and 30 players were included in the control group. The male players of 13 to 17 years age group were included in the present study.

Criterion Measurement :

No.	Variable	Test	Measurement
2	Vital capacity	Pic flow meter	ml

Statistical Process
Statistical technique such as analysis of covariance was applied to know the effects on Resistance Circuit training group and Intensive Interval training group. Mean difference was examined at 0.05 levels by using Least Significant Difference (Post Hoc) Test.

Result of the Study :

Table – 1 Analysis of covariance of mean scores of vital capacity of two experimental groups and a control group

Test	Groups			Analysis of variance				
	Resistance Circuit Training	Intensive Interval Training	Control	Sum of classes (SS)		*df*	MSS	*'F'*
Pretest mean	242.655	263.322	240.331	A	9615.556	2	4807.778	1.281
				W	302550.00	87	3477.586	
Post-test mean	269.003	394.665	391.003	A	28895.556	2	14447.778	5.089
				W	308286.667	87	3543.525	
Adjusted mean	374.858	380.715	359.094	A	7364.878	2	3682.439	12.118*
				W	30309.693	86	352.438	

***Significance criterion at 0.05 levels 'F' = 0.05 (2,87) = 3.101 & (2,86) = 3.103**
In the above table – 1 the 'F' ratio of pre-test mean of Vital Capacity test performance was found to be 1.281. Which compared to the table value (3.101) was not found to be significant at 0.05 level. The 'F' ratio of the mean of the final test of the three groups was found to be 5.089. Comparing it with the table value (3.101) was found to be significant at 0.05 level. The 'F' ratio of corrected medians was found to be 12.118. Comparing it with the table value (3.103) was found to be significant at 0.05 level. Significance was examined with logarithmic differences between adjusted medians. Which is shown in Table – 2.

Table – 2 Critical difference of mean scores of vital capacity of two experimental groups and a control group

Mean			Mean difference	Critical difference
Resistance Circuit Training	Intensive Interval Training	Control Group		
374.858	380.715		5.857	7.136
374.858		359.094	15.763*	
	380.715	359.094	21.620*	

*** Significance at 0.05 levels**

Difference between adjusted mean scores of vital capacity of two experimental groups and a control group is seen clearly in table – 2. The difference is found out between Resistance Circuit Training group and Intensive Interval Training group, Resistance Circuit Training group and control group and Intensive Interval Training group and control group and it was compared with critical difference. It is observed in table – 2 that higher significant improvement (21.620) was found in Intensive Interval Training group with compared to the control group. Then, higher significant improvement (15.763) was found in Resistance Circuit Training group with compared to the control group. Significant effect of experimental treatment was found higher in Resistance Circuit Training group and Intensive Interval Training group with compared to control group, whereas significant effect of experimental treatment was not found between Resistance Circuit Training group and Intensive Interval Training group.

Conclusion :

Remarkable improvement was found in vital capacity of selected subjects by 12 weeks systematic Resistance Circuit training and Intensive Interval training programmes.

Reference :

1. Gandhi, Harkishandas, Science of Human Anatomy: Obstetrics and Child-rearing, (2nd ed.; Ahmedabad: Parshva Prakashan, 1990),
2. http://www.fitday.com/fitness-articles/fitness/body-building/circuittraining-basics-and-benefits.html
3. http://www.sparkpeople.com/resource/fitness_articles.asp?id=267
4. https://www.google.com/search
5. Varma, Prakash J., A Textbook on Sports Statistics, (Gwalior: Venus Publication, 2000), p.268.