



IMPACT OF 8 WEEK CIRCUIT TRAINING ON SELECTED PHYSIOLOGICAL VARIABLES OF ANDHRA UNIVERSITY HOCKEY PLAYERS

CHITIKENA RAMESH, Research Scholar, Department Of Physical Education And Sports Sciences, Andhra University, Visakhapatnam.

ABSTRACT:

The purpose of the study was to find out impact of 8 week circuit training on selected variables of Andhra university hockey players. 30 subjects were randomly selected from Andhra university intercollegiate players. Their age were ranged from 18-23 years. They were divided into two equal groups' namely experimental group and control group. The experimental group was given circuit training for 8 weeks. The result of the study that there was a significant difference on selected physiological variables such as resting pulse rate, breath holding time, respiratory frequency due to effect of circuit training.

KEYWORDS: Hockey, Circuit training, Pulse Rate, Breath Holding and Respiratory Frequency.

INTRODUCTION:

Circuit training is a fast-paced class in which you done one exercise for 30 seconds to 5 minutes and then move on to another exercise and is a form of body conditioning or resistance training using high-intensity aerobics. It targets strength building and muscular endurance. An exercise "circuit" is one completion of all prescribed exercise in the program. When one circuit is complete, one begins the first exercise again for the next circuit. Traditionally, the time between exercise in circuit training is short, often with rapid movement to the next exercise.

The program was developed by R.E.Morgan and G.T.Anderson in 1957 at the University of Leeds in England.

Circuit training attempts to use economically time of exercise to improve strength, power and cardio respiratory system. Work sessions should combine resistance, speed and rest. To integrate endurance and muscular programmed, circuit training incorporated a number of resistance exercises, in a continuous series, forcing to move in a set of pattern with a specific distance in between. The number and types of exercise, resistance and repetitions vary according to individual level and expectations. Each exercise is done at a moderate rate to quick pace before moving to the next. At specific points there are periods set aside for lighter continued endurance exercise.

A Circuit should be completed 2 or 3 times depending on its length.

Circuit training can be made more stressful by arranging the exercise in a form known as stage training. In circuit when one set of an exercise is completed, the athlete moves on to the next exercise and so on until each of the exercise has been completed once. The circuit is then repeated until all the sets have been completed. In stage training the athletes one set of an exercise a short break, then repeats a second set, and so until all sets of that exercise have been completed. The athlete then moves on to next exercise. Another passivity is to groups two exercise together one exercise acting as the recovery period for the other.

Circuit training can provide vigorous activity in a number of fitness and motor activities and is aimed at developing all the basic physical fitness components performed in an interesting and imaginative fashion.

HOCKEY:

Field hockey is a popular sport across the world and is a national sport of India. The world of field hockey is constantly mounting, and thus a thorough analysis of skilled performance to evaluate its functionality is necessary. Many studies have stated the continuous wear and phenomena in structure and functions of the musculoskeletal systems and posture due to over load in the players. On grass, watered turf, artificial turf or synthetic ground, as well as indoors, the game can be played. Every team



plays with ten players on the field and a goalkeeper. Sticks made of wood, carbon fiber, or a mixture is used by the players. The hockey stick's length is dependent on the actual height of the player.

Field hockey is the team sport to put the ball into opponent's goal using hockey sticks. A field hockey match consists of four quarters during match and the team of 11 players who scores more goals wins. Field hockey game are played outdoors, on a 91X55 mts field covered with artificial turf . the goalkeeper and defenders protect their own goal, the forwards try to score goals and the midfielders create offensive actions and assist the defenders.

A field player during a field hockey game runs an averagely of 10 km, maximum of which is by jogging or walking and only a shorter one is by sprints. The forwards are the fastest, and defenders are the slowest players. An average HR for a field hockey player is 135 bpm, and there are no significant differences in HR between the formations. The main technical elements of field hockey are dribbling, passing, and shooting.

STATEMENT OF THE PROBLEM:

To purpose of the study **“IMPACT OF 8 WEEK CIRCUIT TRAINING ON SELECTED PHYSIOLOGICAL VARIABLES OF ANDHRA UNIVERSITY HOCKEY PLAYERS”**.

METHODOLOGY:

The purpose of this study was 30 subjects were randomly selected from Andhra university intercollegiate hockey players. Their age were ranged from 18 to 23 years. They were divided into two equal groups namely experimental group and control group. The experimental group was given circuit training. (circuit training weekly three days Sunday, Tuesday , Thursday)at morning from 7:00 to 8:30 am for 8 weeks. The dependent variable as resting pulse rate, breath holding time, respiratory frequency, independent variable as circuit training. The data were collected and statistically analyzed by using (paired 't' test). The level of confidence was fixed at 0.05 level for significant difference.

RESULT:

TABLE 1

Calculation of Mean Standard Deviation Standard Error and 'T' Ratio of the Resting Pulse Rate, Breath Holding Time and Respiratory Frequency Between Pre and Post Test of the Control and Experimental Groups of Hockey players.

Physiological variables Groups	Groups	Periods & Scores	Mean	S.D	S.E	D.M	'T' RATIO
RESTING PULSE RATE	Control Group	Pre test	73.6	4.55	1.17	0.27	0.695
		Post Test	73.87	3.89	1		
	Exp. Group	Pre test	73.07	4.33	1.12	5.2	9.54
		Post Test	67.87	3.16	0.82		
BREAT HOLDING TIME	Control Group	Pre test	26.19	6.12	1.58	0.74	1.37
		Post Test	25.45	6.97	1.8		
	Exp. Group	Pre test	24.93	5.93	1.53	3.61	5.44
		Post Test	28.54	6.395	1.65		
RESPIRATORY FREQUENCY	Control Group	Pre test	20.13	1.36	0.35	0.07	0.323
		Post Test	20.07	1.33	0.34		
	Exp. Group	Pre test	19.6	0.986	0.25	1.53	7.99
		Post Test	18.07	0.884	0.23		

Table 1 show that the obtained mean and standard deviation values of pre-test and post test scores of control group were 73.60+4.55 and 73.87+3.89, 26.19+6.12 and 25.45+6.97, 20.13+1.36 and

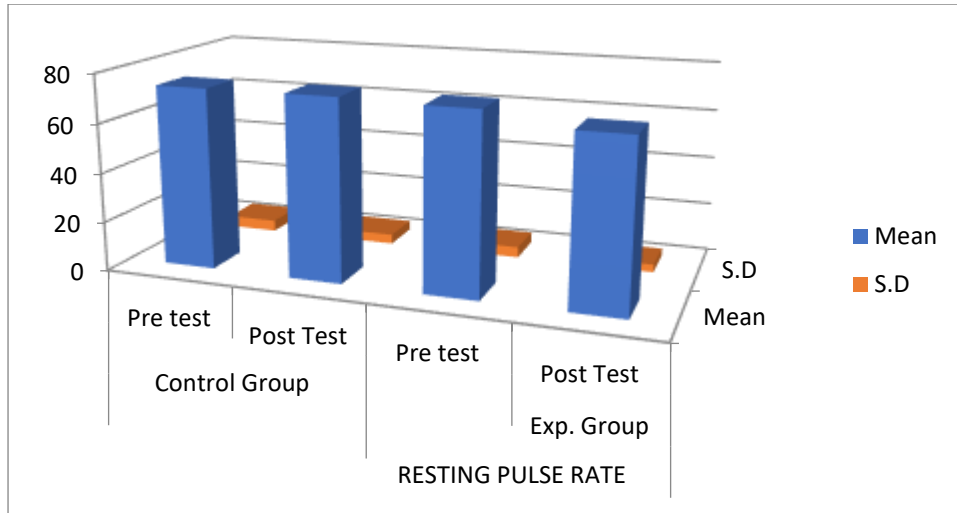


20.07+1.33 respectively, the obtained 't' ratio was 0.695, 1.37 and 0.323. The required table value is 2.14 at 0.05 level of confidence for the degree of freedom 1 and 14. The obtained 't' ratio was lesser than the table value. It is found to be insignificant in resting pulse rate, breath holding time and respiratory frequency of the hockey players.

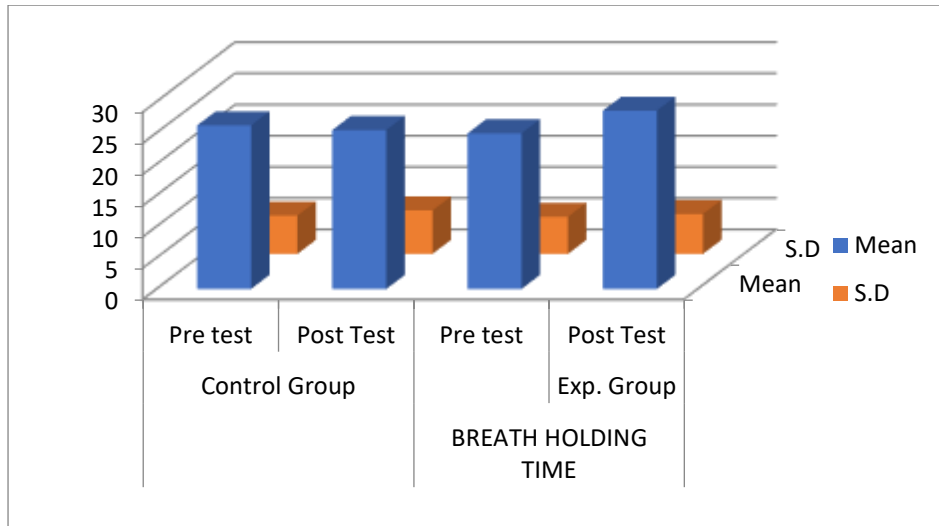
The obtained mean and standard deviation values of pre test and post test scores of circuit training group were 73.07+4.33 and 67.87+3.16, 24.93+5.93 and 28.54+6.395, 19.60+0.986 and 18.07+0.884 respectively, the obtained t ratio was 9.54, 5.44 and 7.99. the required table value is 2.14 at 0.05 level of confidence for the degree of freedom 1 and 14. The obtained t ratio was greater than the table value. It is found to be significant in resting pulse rate, breath holding time and respiratory frequency of the hockey players.

It was inferred from the result of the study that selected circuit training in resting pulse rate, breath holding time, and respiratory frequency brought significant changes in the hockey players among the experimental group with control group.

1. RESTING PULSE RATE CHART

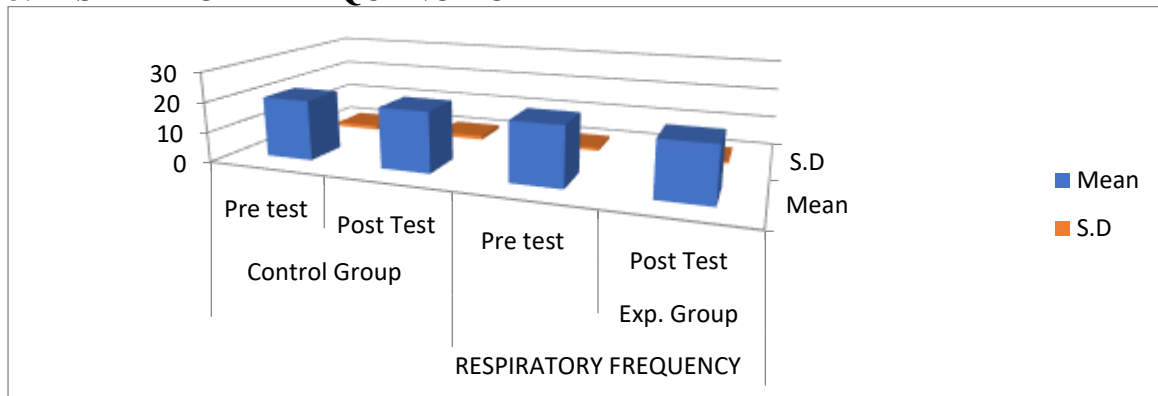


2. BREATH HOLDING TIME CHART





3.RESPIRATORY FREQUENCY CHART



DISCUSSIONS:

The result of the study indicates that there is no significant difference between pre test control and experimental group. But the 8 week of circuit training results in significant changes in resting pulse rate, breath holding time and respiratory frequency for the post test experimental groups than the control group.

CONCLUSION:

From the result of the study the following conclusion were drawn. There was a significant difference on selected physiological variables such as resting pulse rate, breath holding time, respiratory frequency due to the effect of the circuit training programme.

REFERENCE:

- 1.J.Kennedy, Fitness A way of Life (New Delhi: Tata McGraw Hill Publishing Company Ltd.,1988):134-135.
2. Edward J. Bruke (1976), "Validity of Related laboratory field test of physical working capacity", Research Quaterly, Vol 47(1)_p.95-105.
3. Bettegowda, "Assessment of agility in men Hockey and Football Players" (Unpublished Master's Thesis, University College of Phvsical Education Mysore 1976)pp.25-26.
4. Kiran G.N. and Dr. R. Srinivasa (2016). Effect of circuit training on speed, power and cardiovascular endurance among secondary school hockey players. Indian Streams Research Journal; 6(6): 1-4.
5. Haennl RG, Quinney HA, Kappagoda. Effect hydraulic circuit training following coronary artery bypass surgery. 1991; 23(2):158-65.
6. Mandal S, Roy B, Saha GC. Comparative study of speed and agility between university level cricket and football player. International Journal of Physiology, Nutrition and Physical Education. 2017;2(1):386-388.
7. Bettegowda, "Assessment of agility in men Hockey and Football Players" (Unpublished Master's Thesis, University College of Phvsical Education Mysore 1976)pp.25-26.
8. Carl E. Wiligoose, Evaluation In The Health Education And Physical Education (New York: Mc Graw-Hill Book Company Inc., 1961),p.75.
9. Edward J. Bruke (1976), "Validity of Related laboratory field test of physical working capacity", Research Quaterly, Vol 47(1)_p.95-104
10. Izquierdo M, Häkkinen K, Gonzalez-Badillo JJ, Ibáñez J, Gorostiaga EM. Effects of long-term training specificity on maximal strength and power of the upper and lower extremities in athletes from different sports. European journal of applied physiology. 2002;87(3):264-271
11. Kraviz, Len (1996-00-00). "NEW INSIGHTS INTO CIRCUIT TRAINING". University of New Mexico. Retrieved 2006-11-1.