



Effect of Combined Training Programme on Pulse Rate of Badminton Players

Jayakumar. M¹ & Dr. George Abraham²

¹Ph.D Scholar, YMCA College of Physical Education, Chennai and Assistant Professor in Physical Education, Govt. Engineering College, Kozhikode, Kerala.

² Principal, YMCA College of Physical Education, Nandanam, Chennai – 35.

Received 16th May 2020, Accepted 12th June 2020

Abstract

The purpose of the study was to find out the effect of combined resistance training and circuit training programme on resting pulse rate of badminton players. For this purpose, 40 badminton players were selected randomly between the age group of 14 and 17 years. The selected subjects were divided into experimental group ($n = 20$) and control group ($n = 20$). The experimental group underwent combined resistance training and circuit training programme for a period of 8 weeks for six days a week. The control group did not actively take part in any form of specialized fitness training. All the subjects were tested in selected variable namely resting pulse rate using bio-monitor. The data were analysed with analysis of co variance (ANCOVA). The result of the study revealed that the significant difference ($p \leq 0.05$) was seen in resting pulse rate of badminton players of experimental group when compared to control group.

Keywords: Resistance training, Circuit training, Pulse rate.

© Copy Right, IJRRAS, 2020. All Rights Reserved.

Introduction

Badminton is the fastest racquet sport involving quick reactions, lightning fast gameplay and high intensity rallies involving major muscles of the body. Fitness plays a crucial role in badminton since it involves dynamic movements, quick reflexes, stamina, and strength. Aerobic activity is simply any exercise that raises the heart rate significantly for fairly prolonged periods of time. Badminton itself is an aerobic activity and using games as a form of aerobic training is a viable option. Any activity which recruits large muscles will help aerobic fitness provided that total exercise duration is longer than 20 minutes.

Aerobic fitness is essential for a sport like badminton which is the key to successfully building endurance. The aerobic energy system contributes over half the energy supply in players competing at the highest level. The aim of aerobic training is to develop the ability to transport oxygen and food energy around the body i.e., cardiovascular fitness. Interval training is an aerobic training which will help shuttlers perform better on court since they have less recovery time between rallies.

Aerobic exercise involves the heart & lungs transporting oxygen and food energy to the working muscles which help promote recovery from exercise as well as restoring muscle energy supplies for the next

training session. A fatigued player with a weaker aerobic base is bound to make more and frequent mistakes during the game. Therefore, aerobic fitness is a key component of fitness for badminton players to succeed in long duration games. Having good endurance helps plan a game option to attack more often and for longer periods. And also helps to cover the court much faster when required. This allows you to reach the shuttle earlier, giving you many more options for your shot. The exercises required for increasing stamina also impact muscular strength, power, and mass. This is very important to protect your joints. Joints are naturally weak points of the body so having strong muscles helps to protect them. This is interconnected with the strength aspect of fitness. This will also improve the ability of the body to transport oxygen for endurance purposes improving aerobic capabilities.

Resting heart rate or pulse rate is the number of times your heart beats per minute (bpm) while at complete rest. It is an indicator of your physical fitness. Your resting heart rate will decrease as your heart becomes stronger through aerobic exercise training. Resting heart rate will become lower as fitness level increases. Vigorous aerobic exercise, such as running or cycling, has the most effect on lowering your resting heart rate. Moderate-intensity exercise such as brisk walking has less effect.

Pulse rate is lowered as the heart muscle becomes stronger and gets better at pumping out more blood per heartbeat. The body needs fewer heartbeats to pump the same amount of blood. If your heart muscle is weak, it needs to beat more times to pump the same

Correspondence

Jayakumar. M

E.Mail: jayanpvk@gmail.com

amount of blood. A low resting heart rate indicates better fitness in people who are in athletic training or a workout program, but it can have other health significance for people who are not physically fit. The purpose of the study was to find out the effect of combined resistance training and circuit training programme on resting pulse rate of badminton players.

Materials and Methods

Random group design was used in this study. The subjects of the study were 40 badminton players with in the age group of 14 to 17 years were selected from Calicut. The subjects were randomly assigned to two groups that is an experimental group (n = 20) and a control group (n=20). The experimental group participated in combined resistance and circuit training programme for a period of 8 weeks. The control group did not participate in any specialized physical activity

training programme during the same period. All the subjects were tested in resting pulse rate by counting the pulse for one minute at the radial artery before and after 8 weeks of training programme. The training programme included warm up (10 mins), work out (40 minutes) and cool down (10 mins) sessions for a duration of 60 min. The intensity of training was increased after every 2 weeks. The data pertaining to selected variables were analysed by ANCOVA to determine the difference between initial and final mean for experimental and control group at 0.05 level of significance.

Results

The level of significant chosen was 0.05 level. The mean difference of the criterion measures for the control and experimental group is presented in tables 1.

Table 1. Computation of analysis of covariance

Sl.No	Variables	Variance	CTG	CG	Source of Variance	Sum of Squares	df	Mean Square	F
1	Pulse Rate	Pre Test Mean	69.70	69.40	BG	.900	1	.900	0.047
					WG	723.0	38	723.0	
		Post Test Mean	65.50	69.30	BG	144.40	1	144.40	13.15*
					WG	417.20	38	10.97	
		Adjusted Mean	65.401	69.399	BG	159.622	1	159.622	57.32*
					WG	103.026	37	2.784	

Table 1 indicated that the obtained pre-test F-ratio for resting pulse rate was 0.047. Hence the pre-test means of all resting pulse rate was insignificant at 0.05 level of confidence for the degree of freedom 1 and 38. The obtained post-test F-ratio for resting pulse rate was 13.15 respectively. The table F-ratio was 4.09; hence the post-test means of resting pulse rate was significant at

0.05 level of confidence for the degree of freedom 1 and 38. The obtained adjusted post-test F-ratio for resting pulse rate was 57.32. The table F-ratio was 4.10; hence the post-test adjusted means of resting pulse rate was significant at 0.05 level of confidence for the degree of freedom 1 and 37.

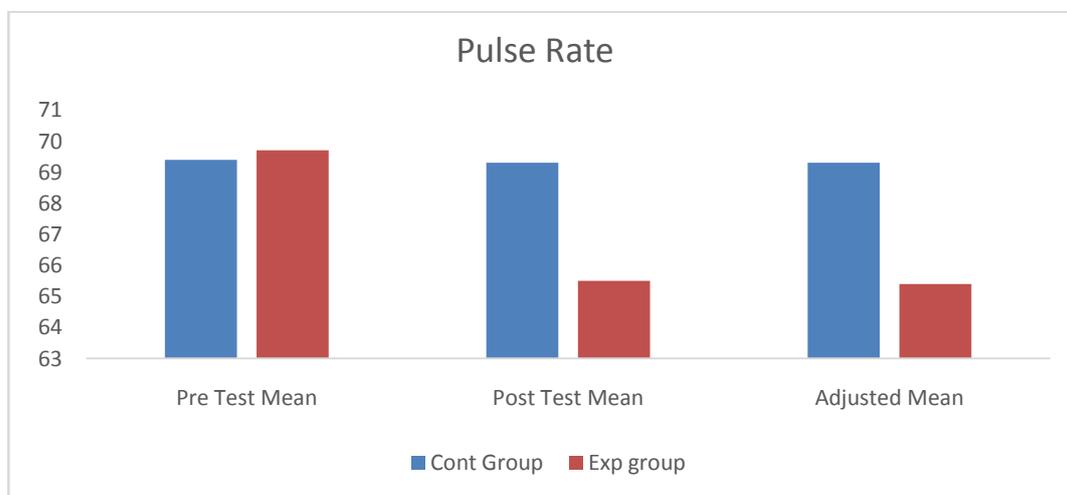


Figure 1. The pre, post and adjusted post test mean values of combined training group and control group in pulse rate

Conclusion

The training for 8 weeks showed positive significance on resting pulse rate of badminton players.

References

1. Corbin, B. Charles., & Lindsey Ruth. (1994). *Concept of Fitness and wellness with Laboratories*, Iowa; Wm.C. Brown publishers.
2. Edward, T. Howley., & B. Don Franks. (1986). *Health and fitness instructors hand book*. Pubique; Human kinetic publishers.
3. Edward Fox. (1993). *The Physiological Basis for Exercise and Sports*, Kerper Boulevard, Dubuque: W.M.C. Brown Communications, Inc.
4. <https://en.wikipedia.org/wiki/Badminton>
5. https://en.wikipedia.org/wiki/Circuit_training
6. <https://skiin.com/lower-resting-heart-rate/>
7. <https://neacollege.com/aerobic-and-anaerobic-endurance-in-badminton/>
8. Noble Bruce, J. (1986). *Physiology of Exercise and Sports*. Times: Mirror, Mosby College publishing.
9. Roger, W. Earle., & Thomas, R. Baechle. (1994). *Essentials of Strength Training and Conditioning*, Developed by the National Strength and Conditioning Association (NSCA) and now in its fourth edition.
10. <https://www.verywellfit.com/resting-heart-rate-3432632>.