



# Impact Of Plyometric And Core Training Combined With Specific Training On Selected Physiological Variables In College Mens Cricket Players

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## ABSTRACT

The purpose of the study was to investigate the impact of plyometric and core training combined with specific training on selected physiological variables among college men's cricket players. 45 male Cricket players were randomly selected as the subjects for this study from the age group 18– 25 years in the Erode district. The participants were trained in the plyometric group I (PG), the Core training group II (CG), and the control group. Each group consisted of 15 subjects. Separate linear regression models were used to evaluate the pre-post change in variables. All the subjects were informed about the nature of the study and were asked to cooperate till the end of the experiment and testing period. The experimental treatment, namely plyometric training and core training, was administered for a duration of 8 weeks, and the number of sessions per week was confined to three alternative days. Each session lasted 60 minutes, in addition to the regular schedule of the Cricket training, and both the training packages are presented in Appendices I and II, respectively. Statistically significant improvements in baseline scores in resting heart rate were comparable between the three groups of college Cricket players. resting heart rate improved by 76.46 in the plyometric training group, 77.40 in the core training group, and 80.06 in the control group. Additional research on long-duration intervention in elite players may help to establish the role of plyometric training and core training in conventional Cricket skills for training.

**Keywords:** Physiological, resting heart rate, Plyometric Training, Core Training and Cricket

## INTRODUCTION

Plyometric training is a form of exercise that utilizes the speed and force of various movements to enhance muscle power. Engaging in plyometric training can elevate your physical performance and enhance your capacity to perform diverse activities. Among the most effective methods for developing power is plyometric training. This intense training modality incorporates a

sequence of muscle fiber stretching and contracting to produce significant strength at high velocities. Through such training sessions, you will enhance your overall power and explosiveness. In brief, plyometric refers to exercises that condition muscles to generate power, which is a combination of strength and speed. Plyometric exercises entail a muscle stretch, immediately succeeded by a contraction of the same muscles, which is why they are often termed "jump training." While traditional strength training primarily fosters adaptations in the nervous system and muscles to enhance strength, plyometric exercises are designed to boost explosiveness, enabling the generation of maximum force in minimal time. Consider a sprinter launching from the starting line or an Olympic long jumper leaping from a stationary position; both require explosive power to excel in their respective disciplines. Plyometric training is a crucial element in the performance training of most professional sports, as it emphasizes the speed aspect of power. Examples of plyometric exercises include vertical and broad jumps, where the objective is to leap as high and/or as far as possible. Other excellent examples of plyometric exercises are skipping rope, jumping squats, single-leg hops, and clapping push-ups. In contrast to conventional strength training exercises that involve prolonged, slow movements aimed at increasing muscular strength and mass, plyometric training focuses on rapid, explosive movements intended to enhance speed and power. This can be accomplished by executing multiple exercises that train our bodies and brains to activate more muscle fibers more rapidly, thereby improving the efficiency and speed of our muscle contractions. Ultimately, this approach will lead to an increase in our power.

## **CORE TRAINING**

Core training involves performing specific exercises aimed at developing and strengthening the stabilizer muscles. Weakness in any of these core muscles can lead to lower back pain or an increased waistline. Core stability is defined as an individual's capacity to stabilize their core. In this context, stability should be understood as the ability to manage the position and movement of the core. Therefore, a person with enhanced core stability possesses a higher degree of control over the positioning and movement of this part of their body. The core is often engaged in facilitating other bodily movements, such as those of the limbs, and it is believed that enhancing core stability can also improve a person's capacity to execute these additional movements; for instance, core stability training may enhance an individual's running performance.

## **METHODOLOGY**

To achieve the purpose of the study, the impact of plyometric and core training combined with specific training on selected physiological variables among college men's cricket players. Forty-five (n=45) male inter-collegiate Cricket players were selected from the Erode district, Tamil Nadu, India. This study consisted of three equal groups of fifteen subjects each. The age of subjects ranged from 18 to 25 years. The following variables were selected, namely: physiological variable, resting heart rate, and power. Experimental Group I underwent plyometric training and Experimental Group II underwent Core training, respectively. The control group was not exposed to any specific training. The experimental treatment, namely plyometric training and core training, was administered for a duration of 8 weeks, and the number of sessions per week was confined to three alternative days. Each session lasted 60 minutes, in addition to the regular schedule of the Cricket training and both the training packages are presented in Appendices I and II, respectively.

## STATISTICAL TECHNIQUE

The collected data from the three groups prior to and after the experimental treatments on selected physiological performance variables were statistically analysed by using the statistical technique of analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post-test means was found to be significant, Scheffe's test was followed as a post hoc test to determine which of the paired means differences was significant. In all the cases, a 0.05 level of confidence was fixed as the level of confidence to test the hypotheses.

## RESULTS AND ANALYSIS

The influence of independent variables on each of the criterion variables is analysed and presented below. The training period was limited to eight weeks. The dependent variables selected for these studies were the physiological variable, resting heart rate. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variables. The data obtained from the experimental groups before and after the experimental period were statistically analysed with a dependent t'-test and Analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post-test means was found to be significant, Scheffe's Post hoc test was applied to determine the paired mean differences. The level of confidence was fixed at the 0.05 level for all the cases.

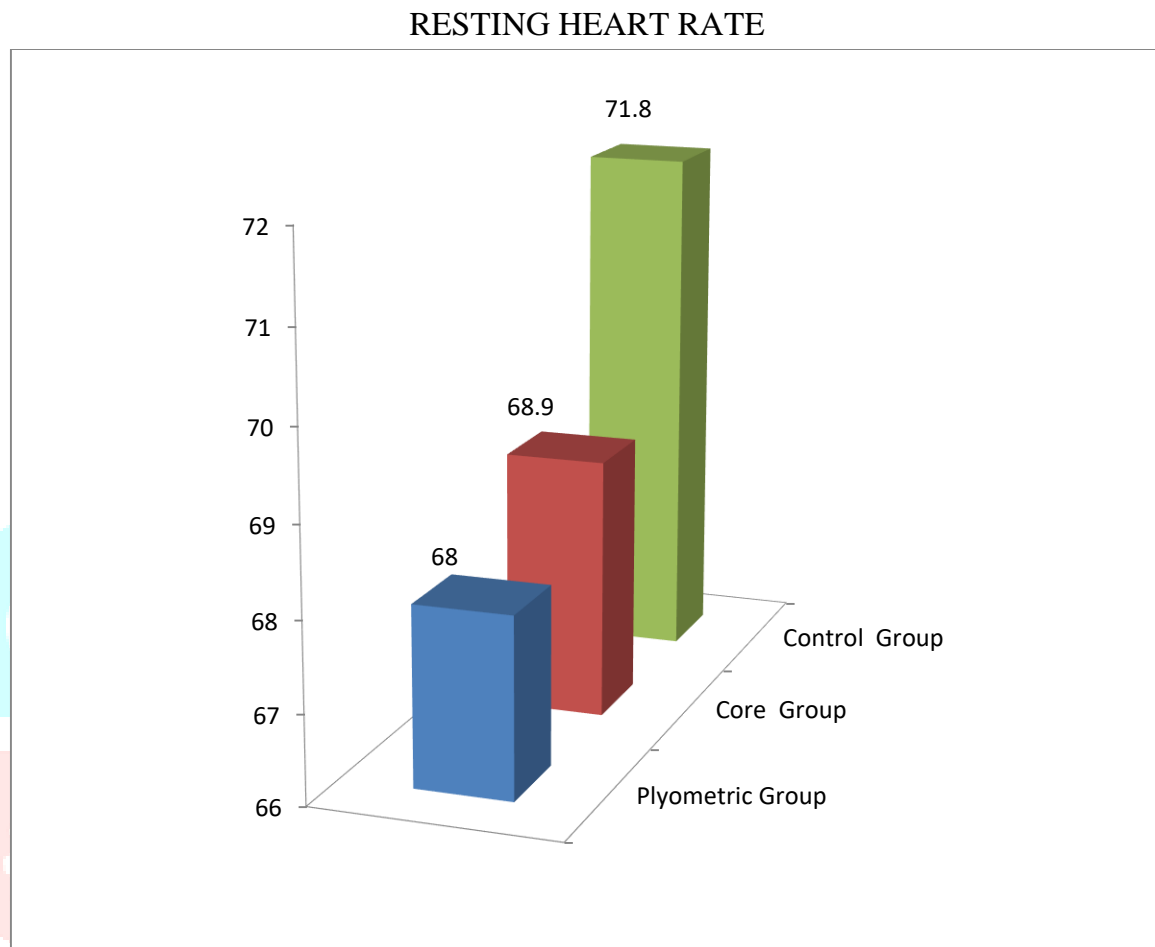
**Table 1**

Analysis of covariance of pre-test and post-test mean among the plyometric and core Training, and control groups on Resting heart rate

Test	Plyometric Group	Core Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-Test Mean	72.40	73.10	72.85	BG	5.62	2	2.81	0.48
				WG	245.30	42	5.84	
Post-Test Mean	68.20	69.10	72.00	BG	120.45	2	60.22	9.75*
				WG	259.30	42	6.17	
Adjusted Post-Test Mean	68.00	68.90	71.80	BG	110.20	2	55.10	10.85*
				WG	213.10	41	5.20	

**Figure -1**

The Adjusted Post Test Mean Values of Plyometric, Core Training Group and Control Group on Resting Heart Rate



## CONCLUSION

The results of the research indicated a statistically significant enhancement in the physiological variables, specifically resting heart rate, when compared to the control group. Consequently, the study concluded that the plyometric training program has led to a notable increase in certain physiological variables, including resting heart rate.

## RECOMMENDATIONS

Comparable research could be undertaken for women, while also taking into account age and other variables as experimental factors. Additionally, investigations may be carried out along similar lines with varying dietary regimens.

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