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IMPACT OF BATTLE ROPE TRAINING ON SELECTED PHYSICAL FITNESS AND PHYSIOLOGICAL VARIABLES AMONG INTERCOLLEGIATE MALE CRICKET BOWLERS

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ABSTRACT

The purpose of this study was to evaluate the impact of a battle rope training programme on selected physical fitness and physiological variables among inter-collegiate level male cricket players. Twenty-four male cricketers from Coimbatore district, aged between 18 and 25 years, were randomly selected as subjects and divided into two groups: an experimental group (n = 12) and a control group (n = 12). The study followed a true experimental design with pre-test and post-test measures. The selected variables included leg strength, shoulder explosive power, flexibility, resting heart rate, and vital capacity. The experimental group underwent a six-week battle rope training programme, five days per week, with each session lasting 60 minutes, while the control group did not receive any specific training. Data were analyzed using a paired sample t-test, and the level of significance was set at 0.05. The results indicated significant improvements in all selected variables in the experimental group compared to the control group. It was concluded that battle rope training is effective in enhancing physical fitness and physiological performance among cricket players.

KEYWORDS: *Battle Rope Training, Physical Fitness, Physiological Variables, Cricket Players, Experimental Study.*

INTRODUCTION

Cricket is a physically demanding sport that requires a combination of strength, power, endurance, and physiological efficiency. Modern training methods emphasize functional and sport-specific exercises to improve athletic performance. Battle rope training has emerged as an effective high-intensity functional training method that enhances muscular strength, power, cardiovascular endurance, and coordination.

Battle rope exercises involve dynamic, rhythmic movements that engage both upper and lower body muscles simultaneously, making them particularly beneficial for cricket players who require explosive strength and endurance. Despite its growing popularity, limited research has been conducted on its effectiveness in cricket-specific populations. Therefore, this study aims to examine the effects of battle rope training on selected physical fitness and physiological variables among inter-collegiate male cricket players.

SELECTION OF SUBJECTS

The purpose of this study was to determine the impact of battle rope training programme on selected physical fitness and physiological variables of Inter-Collegiate level male cricket players. To achieve the purpose of the study, 24 male intercollegiate Cricket players are studying in and around Coimbatore district were randomly selected as subjects. Their age as range from 18 to 25 years respectively.

SELECTION OF VARIABLES

The research scholar reviewed the available literature pertaining to the battle rope training practices from books, journals, periodicals, magazines and research papers. Taking into consideration feasibility criteria, availability of instrument and the relevance of the variables of the present study, the following variables will be selected. By considering the feasibility the following physical fitness and physiological variables are selected for this study.

- **PHYSICA FITNESS VARIABLES**
  - Leg Strength
  - Shoulder Explosive Power
  - Flexibility
- **PHYSIOLOGICAL VARIABLES**
  - Resting Heart Rate
  - Vital Capacity

CRITERION MEASURES

As per the available literature and consultation with experts the following standardized tests was used to collected data on selected physical fitness and physiological variables. The selected criterion variables were measured using standardized test and equipment's. The criterion variables selected, test item used and the units of measurement were presented in Table-I

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TABLE-I
LIST OF CRITERION VARIABLES AND TEST ITEMS

S.No	Variables	Test/Equipment used	Measuring unit
I Physical Variables			
1	Leg strength	Dynamometer	In Kilograms
2	Shoulder explosive power	Overhead Medicine Ball Throw	In meters
3	Flexibility	Sit and Reach Flexibility Test	In centimeters
II Physiological Variables			
4	Resting heart rate	Digital heart rate monitor	In Beats per Minute
5	Vital capacity	Spiro meter	In liters

TRAINING PROGRAMME

The training group, namely the battle rope training group, underwent their training program for six weeks. They trained five days a week, with each session lasting 60 minutes, including warm-up and cool-down exercises. The control group did not participate in any specific training; however, they continued with their regular physical education curriculum. All the subjects who participated in the training program were monitored throughout the training period. None of them reported any injuries. However, muscle soreness was reported during the early weeks but subsided later. Attendance was recorded before the commencement of each training session, and all subjects attended more than 90% of the total training sessions.

EXPERIMENTAL DESIGN

This study was conducted to determine the possible causes and impact of battle rope training programme on selected physical fitness and physiological variables of Inter-Collegiate level male cricket players. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=24) were randomly assigned to two groups, namely Group-I experimental group (N=12) and Group-II control group (N=12), with twelve subjects in each group. All the participants were tested before and after the experimentation on motor fitness variables, namely Leg strength, shoulder explosive power and flexibility using standardized tests. physiological variables namely: resting heart rate and vital capacity. After the pre-test, the experimental group underwent six weeks of battle rope training for five days per week for 60 minutes per day, while the control group was not given any specific training. After six weeks of training, the post-test was conducted, and the readings were carefully recorded as post-test scores.

TABLE – II
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON LEG STRENGTH OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	56.51 ±0.34	61.82 ±1.35	5.31	0.40	0.00	13.27*
Control	56.31 ±0.22	56.44 ±1.80	0.13	0.52	0.05	0.25

**** Significant at 0.05 level.***

Table – II Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of Battle rope training group and control group are 13.27 and 0.25 for leg strength performance. The experimental 't' value is 13.27 significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 0.25 which is less than the required table value, it indicates that there was not significant improvement on leg strength performance due to they were not subjected to any specific training. The result of the study shows that battle rope training group has significantly improved the performance of leg strength. The Graphical Representation of the Pre and Post Test Mean Value of battle rope training Group and control Group on leg strength presented in Figure-1

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FIGURE – I
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST-TEST MEANS VALUES OF TRAINING GROUP AND CONTROL GROUP ON LEG STRENGTH

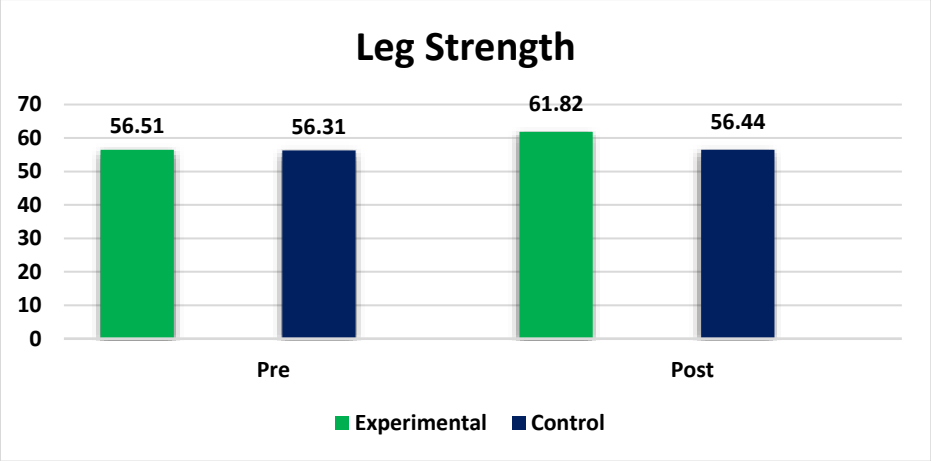


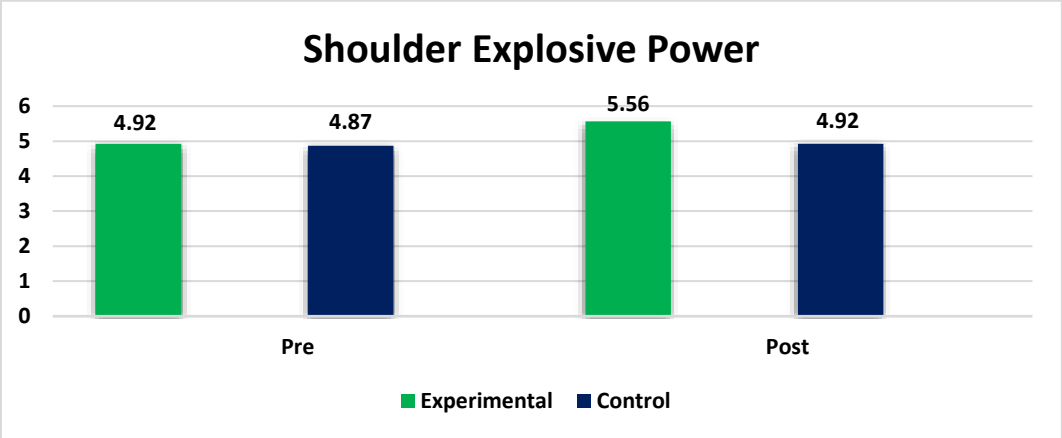
TABLE – III
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON SHOULDER EXPLOSIVE POWER OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	4.92 ±0.07	5.56 ±0.13	0.64	0.04	0.00	14.88*
Control	4.87 ±0.06	4.92 ±0.13	0.20	0.04	0.24	1.22

**** Significant at 0.05 level.***

Table – III Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of battle rope training group and control group are 14.88 and 1.22 for leg strength performance. The experimental 't' value is 14.88 significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 1.22 which is less than the required table value, it indicates that there was not significant improvement on shoulder explosive power performance due to they were not subjected to any specific training. The result of the study shows that battle rope training group has significantly improved the performance of shoulder explosive power. The Graphical Representation of the Pre and Post Test Mean Value of battle rope training Group and control Group on shoulder explosive power presented in Figure-II

FIGURE – II
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST-TEST MEANS VALUES OF BATTLE ROPE TRAINING GROUP AND CONTROL GROUP ON SHOULDER EXPLOSIVE POWER



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TABLE – IV
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON FLEXIBILITY OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	20.14 ±0.21	23.86 ±1.28	3.72	0.37	0.00	9.95*
Control	20.54 ±0.38	20.95 ±1.08	0.41	0.33	0.24	1.24

Significant at 0.05 level

Table – IV Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of battle rope training group and control group are 9.95 and 1.24 for flexibility performance. The experimental 't' value is 9.95 are significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 1.24 which is less than the required table value, it indicates that there was not significant improvement on flexibility performance due to they were not subjected to any specific training. The result of the study shows that battle rope training group has significantly improved the performance of flexibility. The Graphical Representation of the Pre and Post Test Mean Value of battle rope training Group and control Group on flexibility presented in Figure-III

FIGURE – III
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST-TEST MEANS VALUES OF BATTLE ROPE TRAINING GROUP AND CONTROL GROUP ON FLEXIBILITY

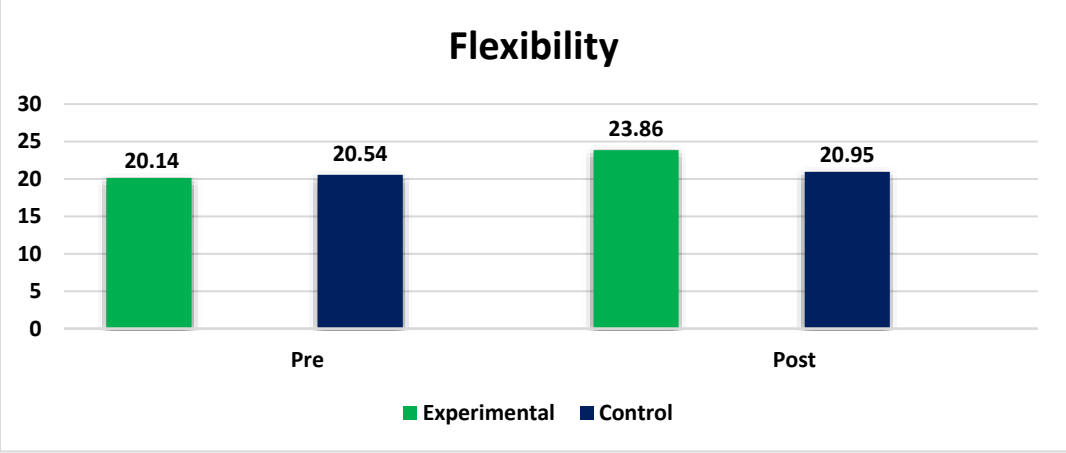


TABLE – V
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON RESTING HEART RATE OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	80.08 ±0.66	76.95 ±1.05	3.13	0.36	0.01	8.69*
Control	80.14 ±0.59	79.96 ±0.88	0.18	0.31	0.05	0.58

**** Significant at 0.05 level.***

Table – V Indicates the paired sample 't' was computed on selected dependent variables. The 't' test value of battle rope training group and control group are 8.69 and 0.58 for resting heart rate performance. The experimental 't' value is 8.69 are significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 0.58 which is less than the required table value, it indicates that there was not significant improvement on resting heart rate performance due to they were not subjected to any specific training. The result of the study shows that battle rope training group has significantly improved the performance of resting heart rate. The Graphical Representation of the Pre and Post Test Mean Value of battle rope training Group and control Group on resting heart rate presented in Figure-I

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FIGURE – IV
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST TEST MEANS VALUES OF BATTLE ROPE TRAINING GROUP AND CONTROL GROUP ON RESTING HEART RATE

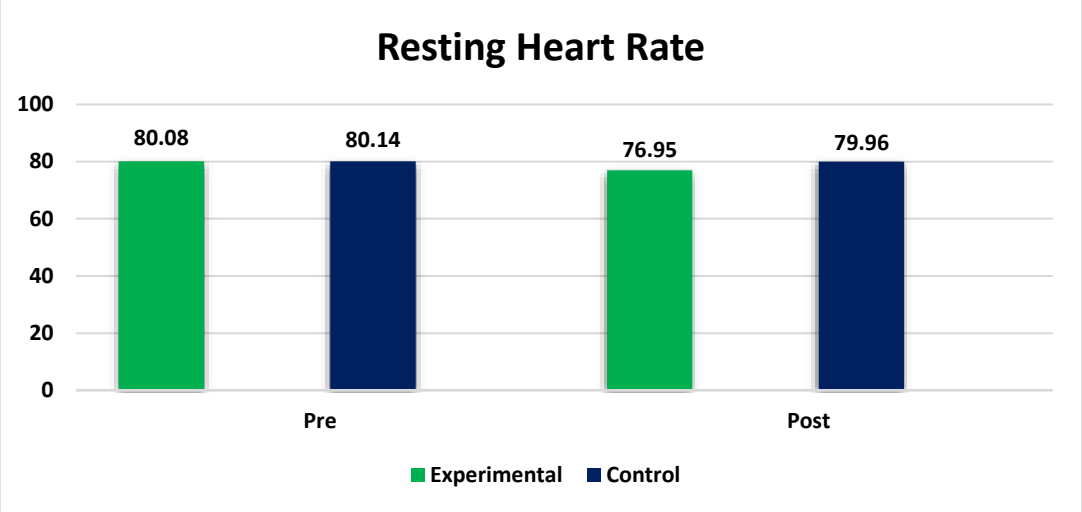


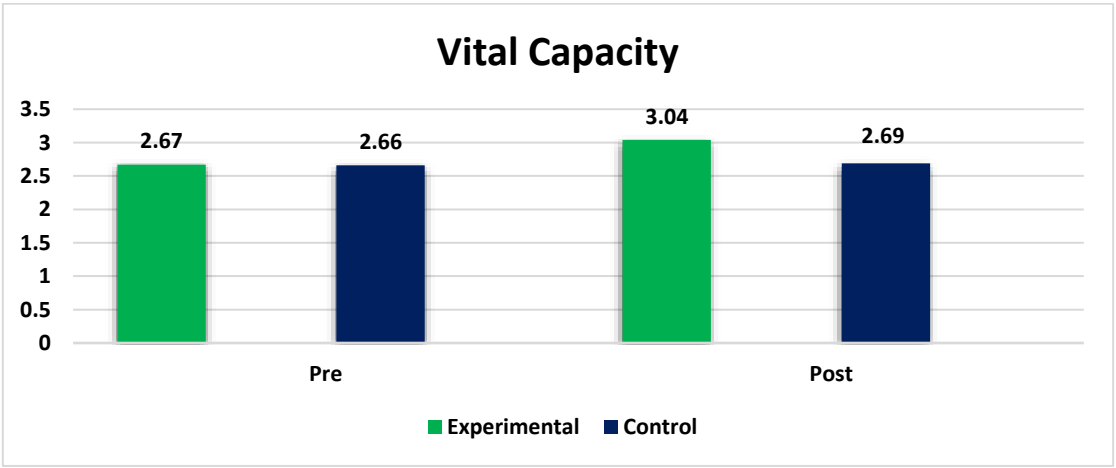
TABLE – VI
THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON VITAL CAPACITY OF EXPERIMENTAL AND CONTROL GROUPS

Groups	Pre test mean ±SD	Post test mean ± SD	M. D	SEM	P Value	't'-ratio
Experimental	2.67 ±0.04	3.04 ±0.07	0.35	0.02	0.00	16.09*
Control	2.66 ±0.04	2.69 ±0.05	0.38	0.018	1.13	1.62

**** Significant at 0.05 level.***

Table – VI Indicates the paired sample 't' was computed on selected dependent variables. The results are presented in the above Table 4.7. The 't' test value of battle rope training group and control group are 9.95 and 1.62 for vital capacity performance. The experimental 't' value is 16.09 are significantly higher than the required table value of 2.20 with degrees of freedom 11 at 0.05 level of confidence. The 't' test value of control group is 1.62 which is less than the required table value, it indicates that there was not significant improvement on vital capacity performance due to they were not subjected to any specific training. The result of the study shows that battle rope training group has significantly improved the performance of vital capacity. The Graphical Representation of the Pre and Post Test Mean Value of battle rope training Group and control Group on vital capacity presented in Figure-V

FIGURE – V
THE GRAPHICAL REPRESENTATION OF THE PRE AND POST TEST MEANS VALUES OF BATTLE ROPE TRAINING GROUP AND CONTROL GROUP ON VITAL CAPACITY



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DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group that underwent battle rope training showed significant improvement in the selected physical fitness variables, namely Leg strength, shoulder explosive power and flexibility, physiological variables namely resting heart rate and vital capacity compared to the control group. The findings further suggest that battle rope training had a greater impact on enhancing Leg strength, shoulder explosive power and flexibility, resting heart rate and vital capacity compared, than the absence of specialized training.

These results align with previous research, such as Caspersen **Aaron Guyett (2016).** Benefits of Battle Ropes Training Category: Fitness Tags: Battle Ropes, Build Muscle, Featured, Lose Weight. These results align with previous research, such as **Senthil Kumar Ponmoorthi (2016),** which examined the effect of specific batting skill training on selected psychomotor variables on college level cricket players. The study found that the training group demonstrated significant improvements in Muscular strength and flexibility compared to the control group. Similarly, the present study confirms that battle rope training can be an effective method for improving key physical fitness and physiological variables in cricket players.

CONCLUSION

The findings of this study demonstrate that battle rope training significantly improved physical fitness variables, namely Leg strength, shoulder explosive power and flexibility, physiological variables namely resting heart rate and vital capacity of intercollegiate-level cricketers compared to the control group. The results suggest that incorporating battle rope training as part of a structured cricket training program can have a greater impact on enhancing these physical fitness and physiological variables than the absence of specialized training. Therefore, battle rope training can be considered an effective method for improving key physical attributes essential for cricket performance.

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