



## IMPACT OF BATTLE ROPE TRAINING ON SELECTED PHYSICAL FITNESS COMPONENTS AND PERFORMANCE VARIABLES AMONG VOLLEYBALL PLAYERS

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### ABSTRACT

The purpose of the study was to find out the effect of battle rope training on selected physical fitness components namely arm strength, strength endurance and performance variables among male volleyball players. To achieve the purpose of the study twenty two male volleyball players have been randomly selected from various colleges in and around Erode district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects had past experience of at least three years in volleyball and only who those represented their respective college teams were taken as subjects. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the battle training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between battle rope training group and control group. And also battle rope training group showed significant improvement on arm strength, strength endurance and performance compared to control group.

### KEYWORDS

Battle rope training, arm strength, strength endurance, performance.

### Introduction

The Battling Ropes System was created and developed by John Brookfield. John is a multiple world record holder and the author of the popular book, *Mastery of Hand Strength*. Battle ropes are commonly used as a high intensity interval training (HIIT) tool to develop an athlete's strength, power, explosiveness, as well as their anaerobic and aerobic endurance. Battling Ropes or heavy rope training gives the entire body countless benefits. The great thing about training with the Battling Ropes is that movements and techniques can be modified for exercisers of just about any fitness level; from using both hands to grip and work only one end of the rope, to adding more advanced movements that include lower body movements along with the upper body work.

Recently, large diameter ropes (1-2 inches) weighing approximately 20 to 75 pounds called battling ropes have emerged as an alternative training apparatus for HIIT programs. Battling ropes are typically 40 to 50 feet in length and are anchored securely to the floor in the middle of the rope, creating two lengths of 20-25 ft. With knees slightly bent, the exerciser grasps the ends of the extended rope and moves his/her arms rapidly in an up and down motion with a vertical displacement of the rope. There are a number of exercises that can be done with battling ropes but two common motions are: both arms moving together called the "double whip" and both arms moving opposite to one another in the vertical plane called the "alternating whip"

Fitness doesn't get much more simplistic than the highly touted battle ropes. This high-powered rope has taken the elite training scene by storm, becoming popular with the military and most combat/contact (MMA, boxing, football) sports (Andy Rivandeneira, 2014).

### Methodology

To achieve the purpose of the study twenty two male volleyball players have been randomly selected from various colleges in and around Erode district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects had past experience of at least three years in volleyball and only who those represented their respective college teams were taken as subjects. The subjects were randomly assigned into two groups of twelve

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**TABLE-I Criterion measures**

S.No	Criterion measure	Test items	Unit of measurement
1	Arm strength	Dip strength	1/10 <sup>th</sup> of a second
2	Strength Endurance	Sit-Ups Test	In Numbers
3	Performance	Subjective rating	In points

**TABLE – II DESCRIPTIVE ANALYSIS OF PHYSICAL FITNESS COMPONENTS AND PERFORMANCE VARIABLES AMONG EXPERIMENTAL AND CONTROL GROUPS**

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post-Test Mean	SD (±)	Adjusted Mean
1	Arm strength	BRTG	27.28	0.22	29.39	0.31	29.37
		CG	27.44	0.30	28.26	1.12	28.29
2	Strength endurance	BRTG	31.48	0.28	37.72	0.33	37.72
		CG	31.51	0.27	36.26	1.54	36.26
4	Performance	BRTG	5.68	0.11	6.12	0.01	6.15
		CG	5.74	0.12	5.87	0.24	5.85

**BRTG = battle rope training group**

**CG= Control group**

The tables-II the pre, post-test means, standard deviations and adjusted means on physical fitness components and performance of male volleyball players were numerical presented. The analysis of covariance on selected variables of battle rope training group and control group is presented in table – III

**TABLE – III COMPUTATION OF ANALYSIS OF COVARIANCE ON PHYSICAL FITNESS COMPONENTS AND PERFORMANCE VARIABLES AMONG MALE VOLLEYBALL PLAYERS**

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	Arm strength	Pre-test	B.G.	0.14	1	0.14	1.99
			W.G.	1.55	22	0.07	
		Post-test	B.G.	7.65	1	7.65	11.18*
			W.G.	15.05	22	0.68	
Adjusted means	B.S.	6.46	1	6.46	9.09*		
	W.S.	14.91	21	0.71			
2	Strength endurance	Pre-test	B.G.	0.005	1	0.005	0.064
			W.G.	1.69	22	0.07	
		Post-test	B.G.	12.82	1	12.82	10.29*
			W.G.	27.39	22	1.24	
Adjusted means	B.S.	12.79	1	12.79	9.80*		
	W.S.	27.39	21	1.30			
4	Performance	Pre-test	B.G.	0.02	1	0.021	1.41
			W.G.	0.32	22	0.01	
		Post-test	B.G.	0.37	1	0.373	12.15*
			W.G.	0.67	22	0.03	
Adjusted means	B.S.	0.50	1	0.50	23.98*		
	W.S.	0.44	21	0.02			

\*Significant at 0.05 level of confidences  
 (The table values required for significance at 0.05 level of confidence for 1 & 22 and 1 & 21 are 4.30 and 4.33 respectively).

In the table the results of analysis of covariance on arm strength, strength endurance and performance. The obtained 'F' ratio of 1.99, 0.06 and 1.41 for Pre-test means was less than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on arm strength, strength endurance and performance. The obtained 'F' ratio of 11.18, 10.29 and 12.15 for post-test means was greater than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on arm strength, strength endurance and performance. The obtained 'F' ratio of 9.09, 9.80 and 23.98 for adjusted post-test means was greater than the table value of 4.33 for df 1 and 21 required for significance at 0.05 level of confidence on arm strength, strength endurance and performance. The result of the study indicated that there was a significant difference among the adjusted post test means of battle rope training group and control group on arm strength, strength endurance and performance. And also battle rope training group showed significant improvement on arm strength, strength endurance and performance compared to control group.

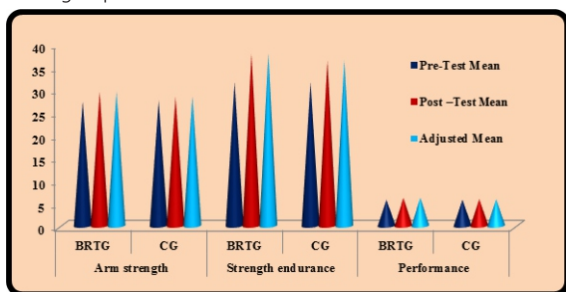


Figure-I The pre, post and adjusted mean values of arm strength, strength endurance and performance of both experimental and control groups are graphically represented in the figure-I

**Discussion of findings**

The results of the study indicate that the experimental group which underwent battle rope training group had showed significant improved in the selected variables namely such as arm strength, strength endurance and performance when compared to the control group. The control group did not show significant improvement in any of the selected variables. The past studies on selected physical fitness components and performance reveals of

Colin McAuslan (2013), Bobu Antony, et al (2015) and Mohan & Kaba Rosario (2016).

**Conclusions**

- From the analysis of data, the following conclusions were drawn.
1. The experimental group volleyball players showed significant improvement in all the selected variables such as arm strength, strength endurance and performance.
  2. The control group volleyball ball players did not show significant improvement in any of selected variables.

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