

IMPACT OF CONTRAST TRAINING ON SELECTED PHYSIOLOGICAL AND PERFORMANCE RELATED VARIABLES AMONG KABADDI PLAYERS

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Abstract-The purpose of the study was to find out the impact of contrast training on selected physiological and performance related variables among Kabaddi players. To achieve the purpose of the study thirty male Kabaddi players have been randomly selected from various colleges in the state of Tamil Nadu, India. The age ranged between 18 and 25 years. The subjects had past experience of at least three years in kabaddi and only those represented their respective college teams were taken as subjects. A series of physiological measurement was carried out on each participant. These included vital capacity, forced vital capacity, slow vital capacity, maximum voluntary ventilation assessed by spirometer and performance related variables namely ankle hold and toe touch were assessed by using subjective rating. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The Experimental group participated in the contrast training for 3 alternative days per week for eight weeks. Duration of training session in all days with one session was one hour approximately which including warming up and limbering down. 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 statistically analyzed through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. In all case the criterion for statistical significant would set as 0.05 level of confidence. The results of the study showed that there was significant differences exist between contrast group and control group. And also contrast training group showed significant improvement on vital capacity, forced vital capacity, slow vital capacity, maximum voluntary ventilation, ankle hold and toe touch compared to control group.

Key words: contrast training, Kabaddi performance related variables

I. Introduction

Kabaddi is essentially an Indian game, which commands huge popularity in the India as well as its hinterland. The game is known as Kabaddi in northern India. Breath control, raid, dodging and

movement of hand and feet are the basic skills that one has to acquire, in order to play Kabaddi. The player has to acquire power and learn both offensive and defensive skills to excel in the game, which combines the characteristics of rugby and wrestling. Since its inception, India is the best in Kabaddi when compared to other countries. This is due to constant practices of the game and new training methods. Keeping this objective the investigator combined the contrast training on selected physiological and Performance related variables among Kabaddi players

Contrast training is an incredible tool for enhancing raw strength, power and overall athletic performance, but it seems relatively underappreciated and unknown in gyms up and down the country. Contrast training can be described as a set of heavy resistance repetitions followed immediately by an unloaded, explosive exercise utilising the same movement pattern. The concept of contrast training isn't a new one, in fact research investigations have been ongoing since the 1960s, with specialist coaches utilising this training method to achieve phenomenal results from their athletes. It has been known for world class sprinters to utilise dumbbells to perform squatting movements immediately prior to

100 metre events, in order to evoke the effects of contrast training in their subsequent sprinting performance.

Contrast training refers to a type of resistance training that alternates the use of heavy and light load exercises in order to improve muscular power. Improve power through training program The should focus on trying to produce more force or velocity with exercises. Contrast training accomplishes both by requiring performing two exercises back-to-back. The first exercise is a traditional strength exercise, and the second exercise is an explosive exercise that challenges the same muscles and movement pattern. Because the resistance in the first exercise is heavy, this will create more activation of the muscles involved in the movement. Then, by following the first exercise with a more explosive, lighter load exercise that works the same muscles, one will not only teach once body how to activate more muscle, but how to activate that muscle or groups of muscles more quickly resulting in improved power. Contrast training workout comprising of one set of a resistance exercise followed by one set of a matched plyometric exercise. For instance, squats followed by squat jumps or bench press followed by plyometric push-ups.

II. Materials and Methods

The purpose of the study was thirty male Kabaddi players have been randomly selected from various colleges in the state of Tamil Nadu, India. The age ranged between 18 and 25 years. The subjects had past experience of at least three years in kabaddi and only those who represented their respective college teams were taken as subjects. A series of physiological measurement was carried out on each participant. These included vital capacity, forced vital capacity, slow vital capacity, maximum voluntary ventilation assessed by spirometer and performance related variables namely ankle hold and toe touch were assessed by using subjective rating. The subjects were randomly assigned into

two groups, such as experimental group (n=15) and control group (n=15). The Experimental group participated in the contrast training for 3 alternative days per week for eight weeks. Duration of training session in all days with one session was one hour approximately which including warming up and limbering down. The control group maintained their daily routine activities and no special training was given. The collected data were statistically analyzed through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. In all case the criterion for statistical significant would set as 0.05 level of confidence.

TABLE-I
Criterion Measures

S.No	Criterion measure	Test items	Unit of measurement
1	Vital capacity	Spirometer	In litres
2	Forced vital capacity	Spirometer	In litres
3	Slow vital capacity	Spirometer	In litres
4	Maximum voluntary ventilation	Spirometer	In litres
5	Ankle hold	Subjective rating	In points
6	Toe Touch	Subjective rating	In points

TABLE – II
Descriptive analysis of selected Physiological and Performance related variables among Control and Experimental groups

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Vital capacity	CG	2.81	.08789	2.86	.15888	2.86
		CTG	2.80	.06543	3.18	.29730	3.18
2	Forced vital capacity	CG	3.77	.12536	3.88	.47549	3.88
		CTG	3.77	.09716	4.17	.26441	4.18
3	Slow vital capacity	CG	2.89	.15403	3.01	.37293	2.10
		CTG	2.81	.09604	3.39	.39577	3.43
4	Maximum voluntary ventilation	CG	110.47	3.7391 1	115.10	11.139 51	115.08
		CTG	110.53	6.6318 1	125.07	8.1981 4	125.09
5	Ankle hold	CG	6.33	1.3451 9	7.13	1.1872 3	7.20
		CTG	6.60	1.2983 5	7.93	1.1629 2	7.86
6	Toe Touch	CG	5.87	1.2459 5	7.20	1.0141 9	7.39
		CTG	6.60	1.1832 2	8.20	.67612	8.01

CTG= Contrast training group

CG= Control group

The tables II shows the pre and post-test means, standard deviations and adjusted means on selected physiological and performance related variables among Kabaddi players were presented in numerically. The analysis of covariance on selected variables of contrast training and control groups presented in table – III

TABLE – III
Computation of analysis of covariance on selected Physiological and Performance related variables among Kabaddi players

S.No	variables	Test	Sum of variance	Sum of squares	df	Mean square	F ratio
1	Vital capacity	Pre-test	Between group	0.00	1	0.00	.056
			Within group	0.17	28	0.01	
		Post-test	Between group	0.78	1	0.78	13.68*
			Within group	1.60	28	0.06	
		Adjusted means	Between sets	0.79	1	0.79	13.61*
			Within sets	1.57	27	0.06	

2	Forced Vital capacity	Pre-test	Between group	0.00	1	0.00	.017
			Within group	0.352	28	0.01	
		Post-test	Between group	0.66	1	0.66	4.46*
			Within group	4.14	28	0.15	
		Adjusted means	Between sets	0.68	1	0.68	4.66*
			Within sets	3.93	27	0.15	
3	slow vital capacity	Pre-test	Between group	0.04	1	0.04	2.58
			Within group	0.46	28	0.02	
		Post-test	Between group	1.05	1	1.05	7.12*
			Within group	4.14	28	0.15	
		Adjusted means	Between sets	1.44	1	1.44	10.92*
			Within sets	3.57	27	0.13	
4	Maximum voluntary ventilation	Pre-test	Between group	0.03	1	0.03	.001
			Within group	811.47	28	28.98	
		Post-test	Between group	744.51	1	744.51	7.78*
			Within group	2678.18	28	95.65	
		Adjusted means	Between sets	752.65	1	752.65	9.51*
			Within sets	2135.90	27	79.11	
5	Ankle hold	Pre-test	Between group	0.53	1	0.53	0.31
			Within group	48.93	28	1.75	
		Post-test	Between group	4.80	1	4.80	3.48
			Within group	38.67	28	1.38	
		Adjusted means	Between sets	3.22	1	3.22	3.49
			Within sets	24.92	27	0.92	
6	Toe Touch	Pre-test	Between group	4.03	1	4.03	2.73
			Within group	41.33	28	1.48	
		Post-test	Between group	7.50	1	7.50	10.10*
			Within group	20.80	28	0.74	
		Adjusted means	Between sets	2.60	1	2.60	7.38*
			Within sets	9.51	27	0.35	

*Significant at 0.05 level of confidences

(Table value for df 1 and 28 was 4.21, Table value for df 1 and 27 was 4.20)

The obtained F-ratio of 13.61 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of

confidence. The result of the study indicates that there was a significant difference among control and experimental groups on vital capacity. The above table

also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on vital capacity.

The obtained F-ratio of 4.66 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on forced vital capacity. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on forced vital capacity.

The obtained F-ratio of 10.92 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on slow vital capacity. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on slow vital capacity.

The obtained F-ratio of 9.51 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on maximum voluntary ventilation. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on maximum voluntary ventilation.

The obtained F-ratio of 3.49 for adjusted mean was lesser than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was no significant difference among control and experimental groups on Ankle hold. The above table also indicates that pre and post test of control and experimental groups did not differ significantly on Ankle hold.

The obtained F-ratio of 7.38 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on toe touch. The above table also

indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on Toe touch

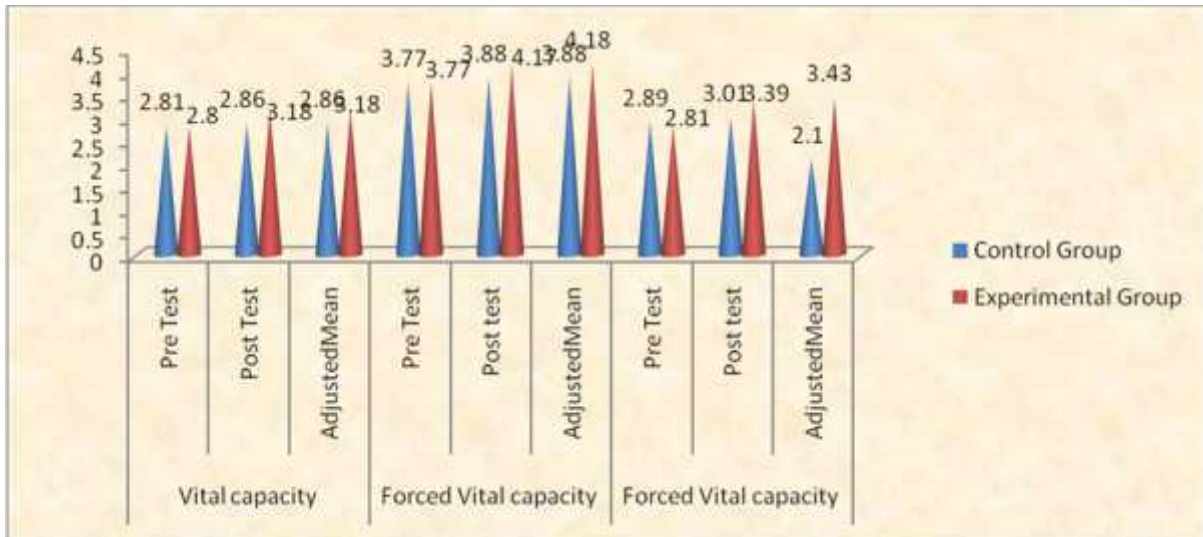


Figure-I Bar diagram showing the pre-test, post-test and adjusted mean of the control and experimental groups on vital capacity, forced vital capacity, slow vital capacity, maximum voluntary ventilation.

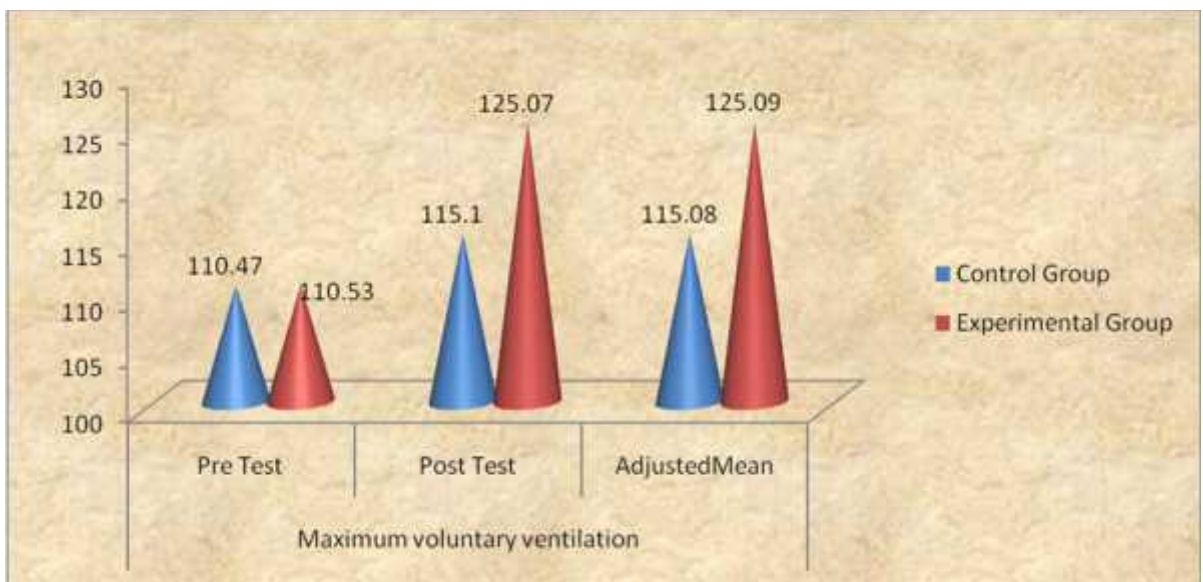


Figure-II Bar diagram showing the pre-test, post-test and adjusted mean of the control and experimental groups on maximum voluntary ventilation.

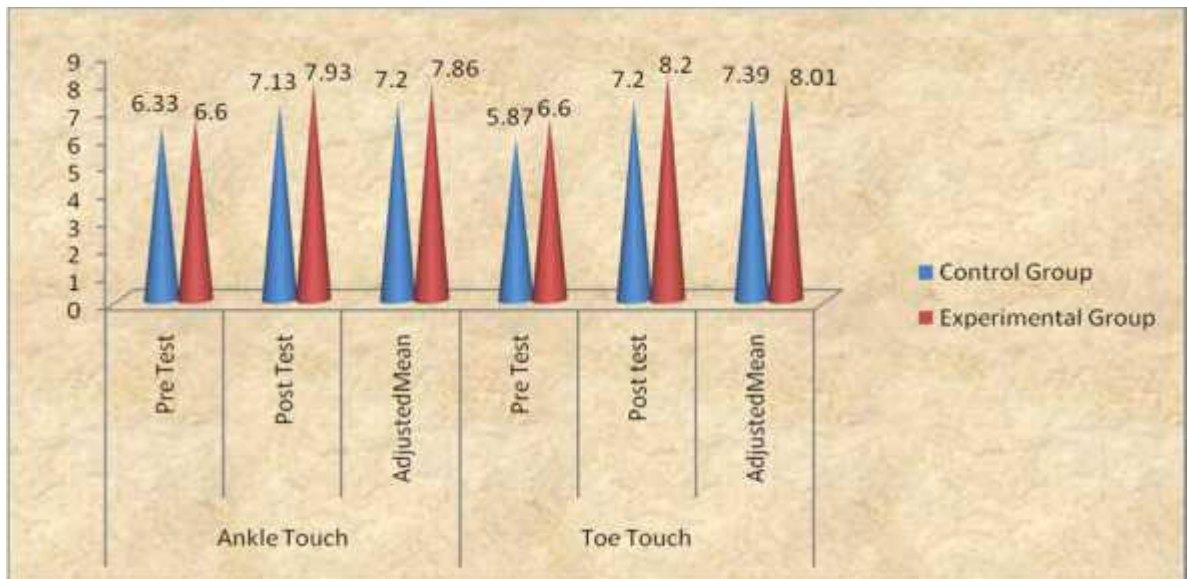


Figure-III Bar diagram showing the pre, post and adjusted mean of the control and group experimental group on ankle hold, Toe touch.

III. Discussion of findings

The results of the study indicate that the experimental group which underwent contrast training had showed significant improved in the selected variables namely such as vital capacity, forced vital capacity, slow vital capacity, maximum voluntary ventilation and Toe touch when compared to the control group. The control did not show significant improvement in any of the selected variables.

The past studies on selected physical variables also reveals Argus et al., (2012) who had found that tapering had significant improvement vertical jump, 3-RM squat and 3-RM bench press and chin-up (max) and 10-m sprint performance. bodyweight squat jump was a bodyweight countermovement jump, 50

kg countermovement jump, 50 kg squat jump, broad jump, and reactive strength index jump height divided by contact time during a depth jump performance Our findings suggest that high-level rugby union athletes should be exposed to higher volume-load contrast training which includes one heavy lifting session each week for larger and more uniform adaptation to occur in explosive power throughout a competitive phase of the season. (Duthie et., al (2002) with the higher strength group having a greater improvement in performance using the contrast training method compared with the traditional method. It was concluded that contrast training is advantageous for increasing power output but only for athletes with relatively high strength levels.

IV. Conclusions

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the selected physiological and performance related variables such as vital

capacity, forced vital capacity, slow vital capacity, maximum voluntary ventilation and toe touch.

2. The control group did not show significant improvement in any of selected variables.

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