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## EFFECT OF YOGIC TRAINING LADDER TRAINING AND THEIR COMBINATION ON SELECTED PHYSIOLOGICAL VARIABLES OF SCHOOL FOOTBALL PLAYERS

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### ABSTRACT

**T**he purpose of the study was to find out the effects of yogic training, ladder training and their combined training on selected physiological variables of school football players. To achieve the purpose of the present study, eighty football school players from Tamilnadu were selected as subjects at random and their ages ranged from 14 to 17 years. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=80) were randomly assigned to four equal groups of twenty football players each. The groups were assigned as yogic training, ladder training, combined yogic training & ladder training and control group in an equivalent manner. The group I underwent yogic training, group II underwent ladder training, group III underwent combined yogic training & ladder training and group IV acted as a control group. The three experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. Initially descriptive statistics and paired 't' test was applied to test the significance of mean gains made in each of the variables by the experimental groups. Analysis of covariance (ANCOVA) was applied. Whenever the adjusted post-test means were found significant, the scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.



**KEYWORDS** :Yogic Training, Ladder Training, Blood Pressure, Vo2 Max, Football.

### INTRODUCTION

Yoga is a way of life and is an integrated system of education for the body, mind and inner spirit. Yogic training was practiced thousands of years ago and nowadays it gained its popularity. Yoga binds the individual irrespective of religion. Especially in school level, each and every student must practice yoga. In recent years the training methods have changed its structure purely on the results of research and ladder training is an excellent way to develop the physical and physiological aspects of the football players. The combination of yoga and ladder training might improve the

overall performance of the school level football players.

## METHODOLOGY

The purpose of the study was to find out the effects of yogic training, ladder training and their combined training on selected physiological variables of school football players. To achieve the purpose of the present study, eighty football school players from Tamilnadu were selected as subjects at random and their ages ranged from 14 to 17 years. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=80) were randomly assigned to four equal groups of twenty football players each. The groups were assigned as yogic training, ladder training, combined yogic training & ladder training and control group in an equivalent manner. The group I underwent yogic training, group II underwent ladder training, group III underwent combined yogic training & ladder training and group IV acted as a control group. The three experimental groups were participated the training for a period of twelve weeks to find out the outcome of the training packages and the control group did not participated in any training programme. Initially descriptive statistics and paired 't' test was applied to test the significance of mean gains made in each of the variables by the experimental groups. Analysis of covariance (ANCOVA) was applied. Whenever the adjusted post-test means were found significant, the scheffe's post-hoc test was administer to find out the paired means difference. To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

## RESULTS

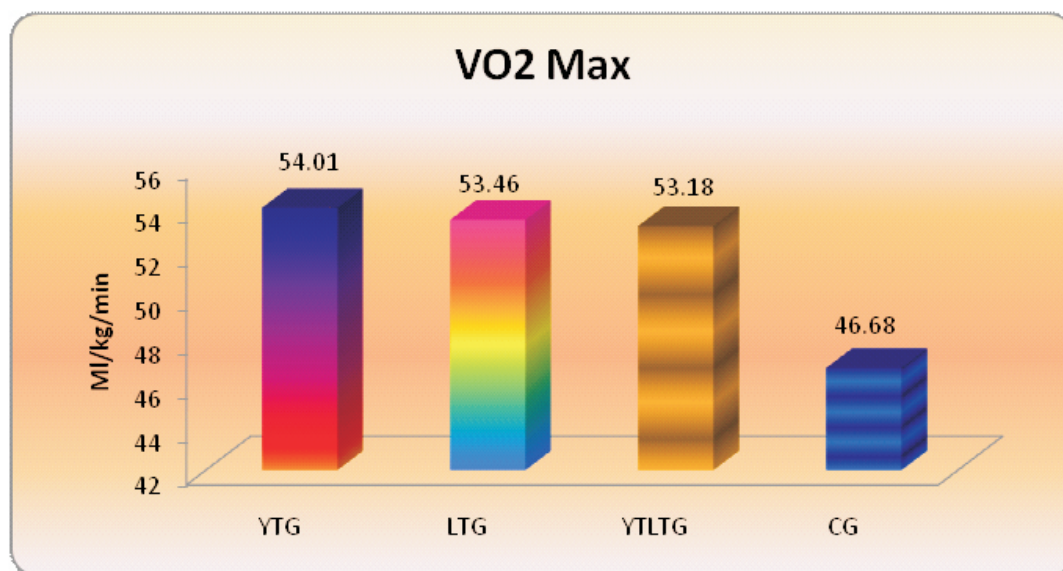
**Table – I**  
**Computation of Analysis of Covariance of Mean of Yoga Training, Ladder Training, Combined Training and Control Groups on VO2 Max (YTG, LTG, YTLTG & CG)**

	YT G	LT G	YTLT G	CG	Source of Varianc e	Sum of Square s	df	Means Square s	F- ratio
<b>Pre- Test Means</b>	47.1 5	47.3 5	46.45	46.5 5	<b>BG</b>	11.75	3	3.91	1.23
					<b>WG</b>	241.00	7 6	3.17	
<b>Post- Test Means</b>	54.0 0	53.4 5	53.20	46.7 0	<b>BG</b>	710.53	3	236.84	86.39 *
					<b>WG</b>	208.35	7 6	2.74	
<b>Adjuste d Post- Test Means</b>	54.0 1	53.4 6	53.18	46.6 8	<b>BG</b>	704.39	3	234.79	84.64 *
					<b>WG</b>	208.04	7 5	2.77	

Table – I reveals that the indicated that the obtained 'F'-ratio for the pre-test means among the groups on VO2 max were 47.15 for experimental group – I, 47.35 for experimental group – II, 46.45 for experimental group – III and 46.55 for control group. The obtained 'F'-ratio 1.23 was lesser than the

table 'F'-ratio 2.72. Hence the pre-test mean 'F'-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 76. The post-test means were 54.00 for experimental group – I, 53.45 for experimental group – II, 53.20 for experimental group – III and 46.70 for control group. The obtained 'F'-ratio 86.39 was higher than the table 'F'-ratio 2.72. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 76. The adjusted post-test means were 54.01 for experimental group – I, 53.46 for experimental group – II, 53.18 for experimental group – III and 46.68 for control group. The obtained 'F'-ratio 84.64 was higher than the table 'F'-ratio 2.72. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 75. It was concluded that there was a significant mean difference among yoga training group, ladder training group, combined training group and control group in developing VO<sub>2</sub> max of the football players.

**Figure – I**  
Adjusted Post Test Differences of the Yoga Training, Ladder Training, Combined Training and Control Groups on VO<sub>2</sub> Max (YTG, LTG, YTLTG & CG)



**Table – II**  
The Scheffe's Test for the Differences between the Adjusted Post Test Means on VO<sub>2</sub> Max

Adjusted Post-Test Means				Mean Difference	Confidence Interval
YTG	LTG	YTLTG	CG		
53.46	54.01	---	---	0.55	1.50
53.46	---	53.18	---	0.28	
53.46	---	---	46.68	6.78*	
---	54.01	53.18	---	0.83	
---	54.01	---	46.68	7.33*	
---	---	53.18	46.68	6.50*	

\* Significant at 0.05 level of confidence

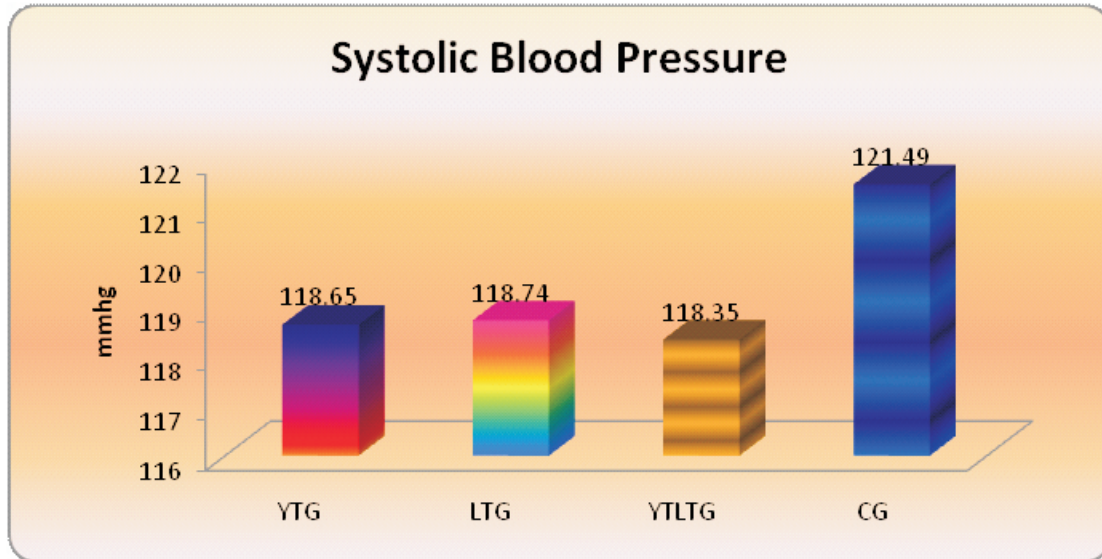
The multiple comparisons showed in table II proved that there existed significant differences between the adjusted means of yoga training and control group (6.78), ladder training and control group (7.33), yoga training & ladder training and control group (6.50). There was no significant difference between yoga training and ladder training group (0.55), yoga training and yoga training & ladder training (0.28), ladder training and yoga training & ladder training (0.83), at 0.05 level of confidence with the confidence interval value of 1.50. The pre, post and adjusted means on VO<sub>2</sub> max were presented through bar diagram for better understanding of the results of this study.

**Table – III**  
**Computation of Analysis of Covariance of Mean of Yoga Training, Ladder Training, Combined Training and Control Groups on Systolic Blood Pressure (YTG, LTG, YTLTG & CG)**

	YTG	LTG	YTLTG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
<b>Pre-Test Means</b>	121.65	121.25	121.60	121.35	<b>BG</b>	2.23	3	0.74	0.77
					<b>WG</b>	73.65	76	0.96	
<b>Post-Test Means</b>	118.65	118.75	118.35	121.50	<b>BG</b>	129.33	3	43.11	52.97*
					<b>WG</b>	61.85	76	0.81	
<b>Adjusted Post-Test Means</b>	118.65	118.74	118.35	121.49	<b>BG</b>	128.38	3	42.79	51.90*
					<b>WG</b>	61.83	75	0.82	

Table – III reveals that the indicated that the obtained 'F'-ratio for the pre-test means among the groups on systolic blood pressure were 121.65 for experimental group – I, 121.25 for experimental group – II, 121.60 for experimental group – III and 121.35 for control group. The obtained 'F'-ratio 0.77 was lesser than the table 'F'-ratio 2.72. Hence the pre-test mean 'F'-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 76. The post-test means were 118.65 for experimental group – I, 118.75 for experimental group – II, 118.35 for experimental group – III and 121.50 for control group. The obtained 'F'-ratio 52.97 was higher than the table 'F'-ratio 2.72. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 76. The adjusted post-test means were 118.65 for experimental group – I, 118.74 for experimental group – II, 118.35 for experimental group – III and 121.49 for control group. The obtained 'F'-ratio 51.90 was higher than the table 'F'-ratio 2.72. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 75. It was concluded that there was a significant mean difference among yoga training group, ladder training group, combined training group and control group in developing systolic blood pressure of the football players.

**Figure – II**  
**Adjusted Post Test Differences of the Yoga Training, Ladder Training, Combined Training and Control Groups on Systolic Blood Pressure (YTG, LTG, YTLTG & CG)**



**Table – IV**  
**The Scheffe's Test for the Differences between the Adjusted Post Test Means on Systolic Blood Pressure**

Adjusted Post-Test Means				Mean Difference	Confidence Interval
YTG	LTG	YTLTG	CG		
118.65	118.74	---	---	0.09	0.81
118.65	---	118.35	---	0.30	
118.65	---	---	121.49	2.84*	
---	118.74	118.35	---	0.39	
---	118.74	---	121.49	2.75*	
---	---	118.35	121.49	3.14*	

\* Significant at 0.05 level of confidence

The multiple comparisons showed in table IV proved that there existed significant differences between the adjusted means of yoga training and control group (2.84), ladder training and control group (2.75), yoga training & ladder training and control group (3.14). There was no significant difference between yoga training and ladder training group (0.09), yoga training and yoga training & ladder training (0.30), ladder training and yoga training & ladder training (0.39), at 0.05 level of confidence with the confidence interval value of 0.81. The pre, post and adjusted means on systolic blood pressure were presented through bar diagram for better understanding of the results of this study.

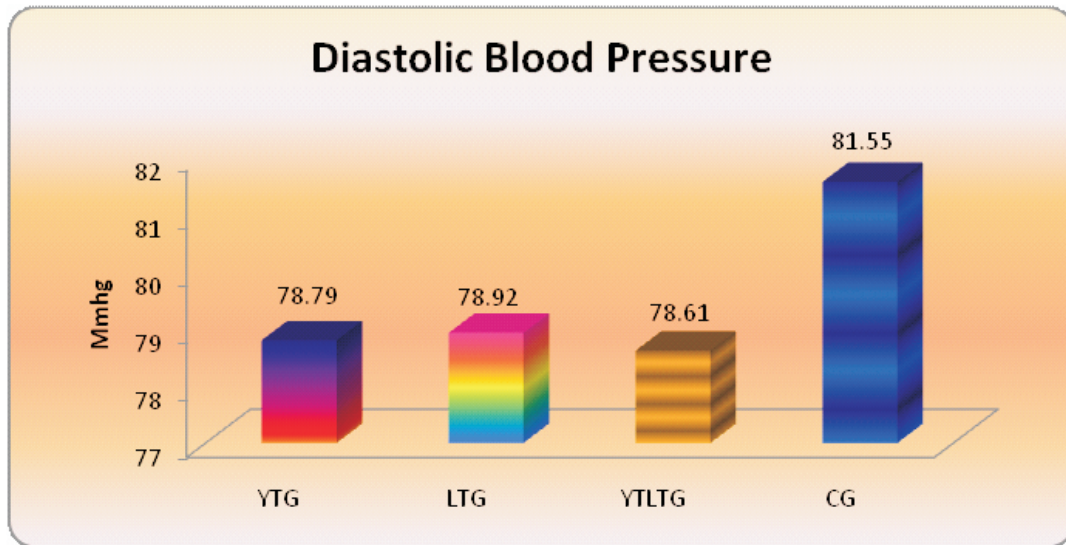
**Table – V**  
**Computation of Analysis of Covariance of Mean of Yoga Training, Ladder Training, Combined Training and Control Groups on Diastolic Blood Pressure (YTG, LTG, YTLTG & CG)**

	YT G	LT G	YTLT G	CG	Source of Varianc e	Sum of Square s	df	Means Square s	F- ratio
<b>Pre- Test Means</b>	81.4 0	81.3 5	81.55	81.4 5	<b>BG</b>	0.43	3	0.14	0.16
					<b>WG</b>	69.25	7 6	0.91	
<b>Post- Test Means</b>	78.8 0	79.0 0	78.60	81.5 5	<b>BG</b>	115.0 3	3	38.34	43.52 *
					<b>WG</b>	66.95	7 6	0.88	
<b>Adjuste d Post- Test Means</b>	78.7 9	78.9 2	78.61	81.5 5	<b>BG</b>	115.0 2	3	38.34	43.28 *
					<b>WG</b>	66.43	7 5	0.88	

Table – V reveals that the indicated that the obtained 'F'-ratio for the pre-test means among the groups on diastolic blood pressure were 81.40 for experimental group – I, 81.35 for experimental group – II, 81.55 for experimental group – III and 81.45 for control group. The obtained 'F'-ratio 0.16 was lesser than the table 'F'-ratio 2.72. Hence the pre-test mean 'F'-ratio was insignificant at 0.05 level of confidence for the degree of freedom 3 and 76. The post-test means were 78.80 for experimental group – I, 79.00 for experimental group – II, 78.60 for experimental group – III and 81.55 for control group. The obtained 'F'-ratio 43.52 was higher than the table 'F'-ratio 2.72. Hence the post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 76. The adjusted post-test means were 78.61 for experimental group – I, 78.92 for experimental group – II, 78.79 for experimental group – III and 81.55 for control group. The obtained 'F'-ratio 43.28 was higher than the table 'F'-ratio 2.72. Hence the adjusted post-test mean 'F'-ratio was significant at 0.05 level of confidence for the degree of freedom 3 and 75. It was concluded that there was a significant mean difference among yoga training group, ladder training group, combined training group and control group in developing diastolic blood pressure of the football players.



**Figure – III**  
**Adjusted Post Test Differences of the Yoga Training, Ladder Training, Combined Training and Control Groups on Diastolic Blood Pressure (YTG, LTG, YTLTG & CG)**



**Table – VI**  
**The Scheffe’s Test for the Differences between the Adjusted Post Test Means on Diastolic Blood Pressure**

Adjusted Post-Test Means				Mean Difference	Confidence Interval
YTG	LTG	YTLTG	CG		
78.99	78.61	---	---	0.38	0.84
78.99	---	78.79	---	0.20	
78.99	---	---	81.55	2.56*	
---	78.61	78.79	---	0.18	
---	78.61	---	81.55	2.94*	
---	---	78.79	81.55	2.76*	

\* Significant at 0.05 level of confidence

The multiple comparisons showed in table VI proved that there existed significant differences between the adjusted means of yoga training and control group (2.56), ladder training and control group (2.94), yoga training & ladder training and control group (2.76). There was no significant difference between yoga training and ladder training group (0.38), yoga training and yoga training & ladder training (0.20), ladder training and yoga training & ladder training (0.18), at 0.05 level of confidence with the confidence interval value of 0.84. The pre, post and adjusted means on diastolic blood pressure were presented through bar diagram for better understanding of the results of this study.

## CONCLUSION

- 1.The significant mean difference does not exist among all the four groups in the pre test on VO2 max, systolic blood pressure and diastolic blood pressure.
- 2.In testing post test mean difference among the four groups statistically significant on variables of VO2 max, systolic blood pressure and diastolic blood pressure. In testing the post adjusted mean among the four groups also predicts the above result.
- 3.In case of physiological variables, from the obtained f-ratios, it was observed that all the training modules have produced similar effect on VO2 max, systolic blood pressure and diastolic blood pressure.

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