

EFFECT OF EIGHT WEEKS TRADITIONAL HIGH AND MODERATE INTENSITY AEROBIC TRAINING ON VO₂ MAX AMONG MEN SOCCER PLAYERS

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INTRODUCTION

Soccer is the most popular game in the world and performed by men and women. In a soccer match aerobic energy system dominates and decisive actions are enriched by anaerobic metabolism. Frequent sprints, jumps and tackles with low recovery may increase the tempo of the match. Aerobic pathway delivers approximately 98% of energy during the game and remaining 2% is anaerobic metabolism. Aerobic fitness is a vital component among soccer players and has been positively correlated with distance covered over a match and other performance outcomes. The VO₂ max provides important information on the capacity of the long-term human energy system. This measurement has significant physiologic meaning in that attaining a high VO₂max requires a high level of respiratory, cardiovascular, and neuromuscular functions. Therefore, VO₂ max is an important measurement of fitness for athletes and coaches. It has been established that VO₂ max is correlated with performance, especially in endurance sports.

High Intensity Training: HIT is the concept where one performs a short burst of high-intensity (or max-intensity) exercise followed by a brief low-intensity activity, repeatedly, until too exhausted to continue. (Wikipedia 2016)⁸. HIT requires that you perform 20 minutes or more, depending on your sports, at an intensity level well above aerobic threshold and the intensity at 90-95 percentage and ending 100% MHR. (Benson,R., and Connolly, D.2011)⁹

Moderate Intensity Training: Absolute moderate intensity has been defined by public health experts as any activity that expends 3.5 to 7 calories per minute. A classic example of moderate physical activity is walking at a 15-20 minute mile pace. (Wikipedia 2016)⁸

METHODOLOGY

To achieve the purpose of the study ninety soccer players (age 19-24) were purposively selected from Jaffna Sri Lanka, and divided into three equal groups. Group I (n=30, High Intensity Training Group (HIT), 60min/ day/3 days/week for 8 weeks), underwent high intensity aerobic training, Group II (n=30, Moderate Intensity Training Group (MIT) 60min/ day/3 days/week for 8 weeks), and Group III (n=30), acted as control. Intensity of the exercise was increased by 5% in every two weeks from 80% and 70% of the heart rate reserve for High intensity aerobic training and moderate intensity aerobic training respectively. The data were collected on VO₂ max by using Queen's step test before and after the intervention Programme. Collected data were statistically analyzed by using dependent 't' test to find out the pre and post test difference, and one way ANOVA for post test mean difference, 0.05 level of confidence was fixed to test the significance. When the obtained 'F' ratio was significant, Scheffe's post hoc test was used to find out the paired mean difference.

RESULTS

Table- I 't' Values of Experimental Groups on VO₂ Max (ml/kg/min)

Groups		Pre-Test	Post-Test	r	't'
Group I (HIT)	\bar{x}	44.83	50.11	0.37	6.34*
	σ	1.58	3.73		
Group II (MIT)	\bar{x}	45.64	55.04	0.25	23.64*
	σ	1.75	1.81		
Group III (Control)	\bar{x}	45.88	46.67	0.03	1.58
	σ	1.49	2.35		

*Significant at .05 level of confidence. with df (2, 29) is 2.04

Table- II Anova for Post Test Mean on VO₂ Max of Experimental Groups.

	Groups			SOV	S.S	df	MS	'F' value
	HIT	MIT	control					
Mean	50.11	55.04	46.67	B	1062.73	2	531.37	70.22*
S.D	3.73	1.81	2.35	W	658.31	87	7.57	

TV : 0.05 df 2 and 87 =3.10

Table- III Scheffe's Test for the Differences Between the Post Test Mean of VO₂ Max

Group I (HIT)	Group II (MIT)	Group III (Control)	MD	CI
50.11	55.04		4.93	
50.11		46.67	3.44	14.32
	55.04	46.67	8.37	

*Significant at 0.05 level of confidence.

The results of the study in the table I shows that, there is significant improvement on VO₂ max due to the HIT (t=6.34*) and MIT (23.64*). However the moderate intensity training (f= 70.22) is better than High intensity training in respect to VO₂ max. Further there is no significant different between both the training on post test mean post hog test.

DISCUSSION

In the present study both high and low intensity training improves VO₂ max. However moderate intensity training increased the O₂ utilization (9.4 ml/kg/min) than high intensity training (5.28 ml/kg/min). But the high intensity most influence on soccer game and this type of training may contribute to enhance the ability to handle extreme game pressure. The same trend was observed in Tabata's study reveals that moderate intensity training increased the VO₂max from 53 +/- 5 ml.kg-1 min-1 to 58 +/- 3 ml.kg-1.min-1 (P < 0.01) (mean +/- SD) than high intensity training¹⁰. The present study reveals that there was a significant difference on cardiorespiratory endurance between the High intensity training group and control group, also Low intensity training group and control group due to the effect of twelve weeks of high, low intensity aerobic training. However there was no significant difference between the high and low intensity aerobic training groups on cardiorespiratory endurance may due to the previous fitness status of the soccer players.

CONCLUSION Moderate intensity training is the key to success in developing VO₂ max than high intensity aerobic training. Hence, it was concluded, that the, near maximum intensity training is adequately enough to improve VO₂ max.

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