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INFLUENCES OF LYDIARD TRAINING ON SELECTED PHYSIOLOGICAL VARIABLES AMONG HOCKEY PLAYERS

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ABSTRACT

The purpose of the study was to find out the influences of Lydiard training on selected physiological variables namely vital capacity, forced vital capacity, slow vital capacity, and maximum voluntary ventilation among Hockey players. To achieve the purpose of the study thirty male Hockey players have been randomly selected from Bharathidasan University, Tiruchirappalli 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 Hockey and only who those represented their respective college teams were taken as subjects. A series of physiological tests was carried out on each participant. These included vital capacity, forced vital capacity, slow vital capacity and maximum voluntary ventilation assessed by spirometer. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the Lydiard training for 3 days a week, one session per day and for 8 weeks each session lasted 90 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 level differences exist between Lydiard training group and control group. And also Lydiard training group showed significant improvement on level of vital capacity, forced vital capacity, slow vital capacity, and maximum voluntary ventilation compared to control group.

Introduction

Arthur Leslie Lydiard was a New Zealand runner and athletics coach. He has been lauded as one of the outstanding athletics coaches of all time and is credited with popularizing the sport of running and making it commonplace across the sporting world. His training methods are based on a strong endurance base and periodisation. The marathon-conditioning phase of Lydiard's system is known as base training, as it creates the foundation for all subsequent training. Lydiard's emphasis on an endurance base for his athletes, combined with his introduction of periodisation in the training of distance runners, were the decisive elements in the world-beating success of the athletes he coached or influenced. Lydiard et al. (1999) opine that the Lydiard training system is based on a balanced combination of aerobic and anaerobic running. Aerobic running means running within once capacity to use oxygen. Everyone, according to his or her physical condition, is able to use a limited amount of oxygen each minute. With the right kind of exercise, one can raise once limit. The maximum limit is called the "Steady State", the level at which one working to the limit of once ability to breathe in, transport, and use the oxygen. The marathon-conditioning phase of Lydiard's system is known as base training, as it creates the foundation for all subsequent training. Lydiard's emphasis on an endurance base for his athletes, combined with introduction of periodisation in the training of distance runners, were the decisive elements in the world-beating success of the athletes he coached or influenced. Periodisation comprises emphasizing different aspects of training in successive phases as an athlete approaches an intended target race. After the base training phase, Lydiard advocated four weeks of strength work. This included hill running and springing, followed by a maximum of four weeks of anaerobic training (Lydiard found through physiological testing that four weeks was the maximum amount of anaerobic development needed—any more caused negative effects such a decrease in aerobic enzymes and increased mental stress, often referred to as burnout, due to lowered blood pH). Then followed a co-ordination phase of six weeks in which anaerobic work and volume taper off and the athlete races each week, learning from each race to fine-tune himself or herself for the target race. For Lydiard's greatest athletes the target race was invariably an Olympic final.

The researcher is a Hockey players, official, coach, administrator, selector, observer attempted to study about the physiological effects of the Hockey players. Lydiard training can help to improve performance in hockey players. Little research had done on Hockey players. The purpose of the study was to find out the impact of Lydiard training on selected physiological variables namely vital capacity, forced vital capacity, slow vital capacity, and maximum voluntary ventilation among Hockey players.

Materials and Methods

To achieve the purpose of the study thirty male Hockey players have been randomly selected from Bharathidasan University, Tiruchirappalli 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 Hockey and only who those represented their respective college teams were taken as subjects. A series of physiological tests was carried out on each participant. These included vital capacity, forced vital capacity, slow vital capacity and maximum voluntary ventilation assessed by spirometer. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the Lydiard training for 3 days a week, one session per day and for 8 weeks each session lasted 90 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.

TABLE-I
Criterion measures

S.No	Criterion measure	Test items	Unit of measurement
1	Vital capacity	Spirometer	In liters
2	Forced vital capacity	Spirometer	In liters
3	Slow vital capacity	Spirometer	In liters
4	Maximum voluntary ventilation	Spirometer	In liters

TABLE – II
Descriptive analysis of selected physiological variables among control and experimental groups

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Vital capacity	CG	2.77	0.07	2.83	0.17	2.83
		LTG	2.79	0.06	3.36	0.23	3.33
2	Forced vital capacity	CG	3.75	0.08	3.66	0.70	3.69
		LTG	3.78	0.09	4.33	0.06	4.31
3	Slow vital capacity	CG	2.80	0.15	2.87	0.25	2.88
		LTG	2.88	0.14	3.21	0.40	3.21
4	Maximum voluntary ventilation	CG	110.33	2.76	118	4.00	118.68
		LTG	111.46	3.33	127	5.71	127.31

LTG= Lydiard training group CG= Control group

The tables-II the pre, post-test means, standard deviations and adjusted means on selected physiological variables of hockey players were numerical presented. The analysis of covariance on selected variables of Lydiard's training and control group is presented in table – III

TABLE – III

Computation of analysis of covariance on selected physiological variables among Hockey players

S.No	variables	Test	Sum of variance	Sum of squares	df	Mean square	F ratio
1	Vital capacity	Pre-test	B.W	0.002	1	0.002	0.36
			W.G	0.14	28	0.005	
		Post-test	B.W	1.90	1	1.90	45.30 *
			W.G	1.17	28	0.04	
		Adjusted means	B.S	1.87	1	1.87	43.02 *
			W.S	1.17	27	0.04	
2	Forced vital capacity	Pre-test	B.W	0.007	1	0.007	0.79
			W.G	0.23	28	0.008	
		Post-test	B.W	3.33	1	3.33	13.26 *
			W.G	7.03	28	0.25	
		Adjusted means	B.S	2.84	1	2.84	11.69 *
			W.S	6.57	27	0.24	
3	Slow vital capacity	Pre-test	B.W	0.04	1	0.04	1.93
			W.G	0.62	28	0.02	
		Post-test	B.W	0.86	1	0.86	7.53*
			W.G	3.20	28	0.11	
		Adjusted means	B.S	0.76	1	0.76	6.48*
			W.S	3.20	27	0.11	
4	Maximum voluntary ventilation	Pre-test	B.W	9.63	1	9.63	1.02
			W.G	263.06	28	9.39	
		Post-test	B.W	546.13	1	546.13	22.42 *
			W.G	681.86	28	24.35	
		Adjusted means	B.S	538.89	1	538.89	21.39 *
			W.S	679.93	27	25.18	

*Significant at 0.05level of confidences

(Table value for df 1 and 28 was 4. 20, Table value for df 1 and 27 was 4.21)

In the table the results of analysis of covariance on vital capacity, forced vital capacity, slow vital capacity and maximum voluntary ventilation. The obtained 'F' ratio of 0.36, 0.79, 1.93 and 1.02 for Pre-test means was less than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on vital capacity, forced vital capacity, slow vital capacity and maximum voluntary ventilation. The obtained 'F' ratio of 45.30, 13.26, 7.53 and 22.42 for post-test means was greater than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on vital capacity, forced vital capacity, slow vital capacity and maximum voluntary ventilation. The obtained 'F' ratio of 43.02, 11.69, 6.48 and 21.39 for adjusted post-test means was greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence vital capacity, forced vital

capacity, slow vital capacity and maximum voluntary ventilation. The result of the study indicated that there was a significant difference among the adjusted post test means of lydiard training group and control group on vital capacity, forced vital capacity, slow vital capacity and maximum voluntary ventilation. And also lydiard training group showed significant level improvement on vital capacity, forced vital capacity, slow vital capacity and maximum voluntary ventilation compared to control group.

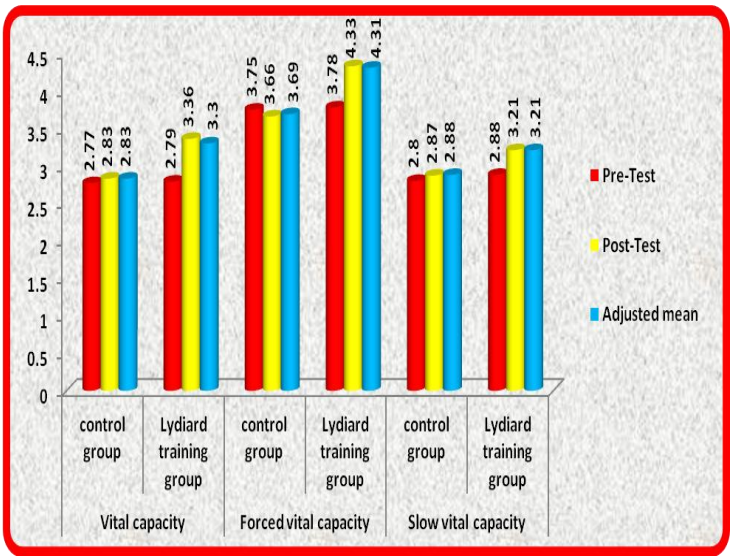

Figure-I The pre, post and adjusted mean values of vital capacity, forced vital capacity and slow vital capacity of both control and experimental groups are graphically represented in the figure-I

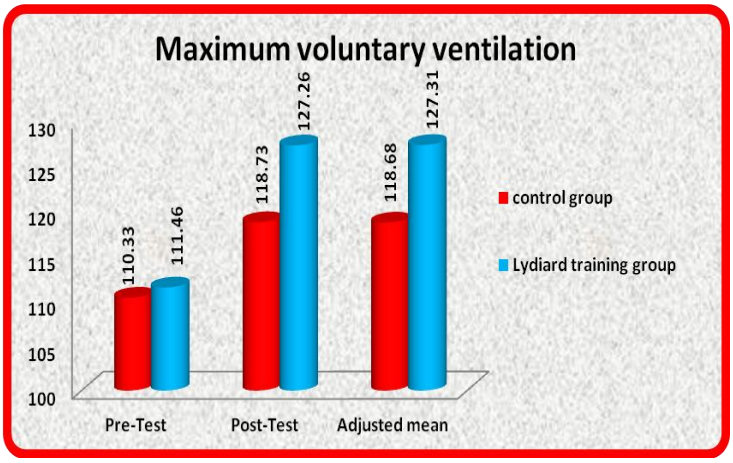

Figure-II The pre, post and adjusted mean values of maximum voluntary ventilation of both control and experimental groups are graphically represented in the figure-II

Discussion of findings

The results of the study indicate that the experimental group which underwent Lydiard's training had showed significant level improvement in the selected variables namely vital capacity, forced vital capacity, slow vital capacity, maximum voluntary ventilation, 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 physiological variables also reveals similar result Mohan and Kalidasan (2013) Found that Lydiard training with tapering group showed significant improvement on level of vital capacity, forced vital capacity, slow vital capacity, and maximum voluntary ventilation compared to control group

Conclusions

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

1. The experimental group hockey players showed significant improvement in all the selected physiological variables namely vital capacity, forced vital capacity, slow vital capacity, and maximum voluntary ventilation.
2. The control group hockey players did not show significant improvement in any of selected variables.

References

Lydiard, Arthur; Gilmour, Garth (1962). *Run to the Top*. London: H. Jenkins.

Lydiard, Arthur; Gilmour, Garth (1978). *Run, the Lydiard Way*. Auckland: Hodder & Stoughton Ltd. ISBN 0-340-22462-2.

Lydiard, Arthur; Gilmour, Garth (1983). *Jogging with Lydiard*. Auckland: Hodder & Stoughton Ltd. ISBN 0-340-32363-9.

Lydiard, Arthur; Gilmour, Garth (1997). *Running to the Top* (2nd Edition ed.). Germany: Meyer & Meyer Sport. ISBN 3-89124-440-1.

Lydiard, Arthur; Gilmour, Garth (1999). *Distance Training for Women Athletes*. Oxford: Meyer & Meyer Sport. ISBN 1-84126-002-9.

Lydiard, Arthur; Gilmour, Garth (1999). *Distance Training for Young Athletes*. Germany: Meyer & Meyer Sport. ISBN 3-89124-533-5.

Lydiard, Arthur; Gilmour, Garth (2000). *Distance Training for Masters*. Oxford: Meyer & Meyer Sport. ISBN 1-84126-018-5.

Lydiard, Arthur; Gilmour, Garth (2000). *Running With Lydiard* (2nd Edition ed.). Meyer & Meyer Sport. ISBN 1-84126-026-6.

Mohan, K., and Kalidasan, R. (2013). Impact of Lydiard training with tapering on selected physiological variables among male race walkers. *International journal of advanced and innovate research.* May Volume.2 No. 4 PP: 938 to 948 (ISSN: 2278-7844)