Analyze the effect of selected Ayurvedic-Herbal medicines on Cardio-respiratory Endurance performance of athletes using Physiological variables

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ABSTRACT

Aims and Objectives: To analyze the effect of selected Ayurvedic-Herbal medicines on Cardio-respiratory Endurance performance of athletes using Physiological variables.

Material and Methods: The data from all three groups was statistically assessed to see if there were any significant differences using the analysis of co-variance. After pre-test means were eliminated, the adjusted post-test means of the three groups were checked for significance, and if there was a significant difference, the Scheffe's Post-hoc test was used to determine the significant difference between paired means.

Results: The result on Cardio-Respiratory Endurance do indicates that, no significant differences existed among three groups. It means that Lassifer Lacca and Mymosa Pudicca may not have any influence on the Cardio Respiratory- Endurance of the subjects thereby accepting the hypothesis thus formulated.

Conclusion: The physiological factors Resting Pulse Rate, Breath Holding Time, Blood Pressure, and Vital Capacity, all of which have a direct association with Cardio-Respiratory Endurance performance, have not changed much. Breathe Holding Time and Respiratory Rate, on the other hand, showed substantial modifications following supplementation. Even while several physiological characteristics changed significantly after supplementation, it may not be enough to cause significant changes in the individuals' Cardio-Respiratory Endurance after supplementation with the Ayurvedic-herbal drug Lakshadi Choornam.

Keywords: Ayurvedic-Herbal medicines, Cardio-Vascular Endurance, physiological variables, Resting Pulse Rate, Vital Capacity, Respiratory Rate, Breath Holding Time, Systolic Blood Pressure, and Diastolic Blood Pressure

INTRODUCTION

Health is an important part of living a successful or happy life, and it comprises a person's physical, mental, social, and emotional well-being. One of them is physical health, which is based on the effective operation of numerous systems in the human body. The genetic endowment of athletes with physical, psychological, physiological, and metabolic abilities relevant to performance attributes required for their sport is critical to their success in sports. Athletes that are genetically talented require specialised training to develop physical strength, mental toughness, and mechanical edge. The purpose of human competition, whether in war or sports, is to obtain an advantage over the opponent. They frequently use drugs and other performance-enhancing chemicals to get an advantage. Athletes, on the other hand, frequently attempt to supplement training with substances and procedures. The operation of numerous systems is linked to the food that is consumed, and several systems of medicine are used to protect one's health from various ailments and to enhance or promote good health, with the Ayurvedic system of medicine being the most widely used in India. Many herbal remedies have been shown to improve physical performance in Ayurveda as well as by the ancient Egyptians, Romans, and Chinese. Ayurvedic remedies make extensive use of herbal plants and spices, which have magical properties not only for curing ailments but also for promoting good health and physical fitness. Mimosa Pudicca and Laccifer Lacca are important Ayurvedic-Herbal treatments that aid in the maintenance of good health. Since ancient times, the aforementioned

remedies have been utilised in various ways to heal diseases as well as to enhance strength and endurance.

The goal of this study was to see how "Lakshadi Choornam" (powder) with components Lassifer Lacca and Mimosa Pudicca affected the subjects' Cardio-Respiratory Endurance. In order to achieve the study's purpose, the research scientist picked 45 college male students enrolled in a professional course in Physical Education as subjects. They were divided into three equal groups at random. The experimental group was separated into three groups: the control group, the placebo group, and the experimental group. The control group received nothing, whereas the second group received only regular wheat powder as a placebo. The experimental group took one gramme of the prepared herbal medicines three times a day, after breakfast, lunch, and supper, for forty-five days. During the experiment, none of the subjects in the three groups changed their normal routine. Pre-tests were administered to all three groups 24 hours before the experiment began, and post-tests were administered 24 hours after the trial concluded. In addition to Cardio-Vascular Endurance, physiological variables such as Resting Pulse Rate, Vital Capacity, Respiratory Rate, Breath Holding Time, Systolic Blood Pressure, and Diastolic Blood Pressure were evaluated.

Using the analysis of co-variance, the data from all three groups was statistically evaluated to see if there were any significant differences. Following the elimination of pre-test means, the adjusted post-test means of the three groups were examined for significance, and if there was a significant difference, the Scheffe's Post-hoc test was employed to evaluate the significant difference between paired means.

REVIEW OF LITERATURE

Valsala et al. (2002) investigated the effect of Mimosa Pudicca root powder on the oestrous cycle and ovulation in a female albino rat, Rattus norvegicus, that was cycling. Mimosa Pudicca root powder (150 mg/kg body weight) administered intragastrically altered the oestrous cycle pattern in female Rattus norvegicus. The rats were all devoid of nucleated and cornified cells. As in dioestrus, only leucocytes were found in the smear, and they remained for two weeks. When rats given the root powder were compared to control rats, the quantity of normal ova decreased significantly while the number of damaged ova increased significantly.

Campbell (1979) used ion microscopy to investigate the localisation of potassium and calcium in the motor organ of the sensitive plant Mimosa Pudicca. An ion microscope was used to examine the potassium and calcium distributions in Mimosa Pudicca's primary motor organ. In the cortex of the motor organ, there are two types of cells, each with its unique location, structure, and ion distribution. Histochemical ion micrographs were clearly connected with features observable in light and electron microscopes.

Prasad et al. (1975) investigated peripheral nerve regeneration in young growing albino rats. Each animal's sciatic nerve was crushed with artery forceps. They were divided into three groups of identical size and given either Lajjawanti entire extract or hydrocortisone. The regeneration process was assessed histologically, electrophysiologically, and the number of axons was counted at each interval. According to the findings of this study, nerve regeneration was increased by 30-40% in Lajjawanti-treated rats.

Allen et al. (1998) conducted a well-controlled trial and found that neither Panax ginseng nor a standardised ginseng extract had any significant influence on cardiovascular, metabolic, or psychologic responses to submaximal, maximum, or supramaximal exercise performance capacity. The findings show that ginseng, in its various forms, does not improve exercise or sport performance.

According to Winslow and Kroll (1998), the first evidence of human usage of plants for treatment dates back to the Neanderthal epoch, and various modern medicines may be categorised as herbals.

Herbs are regulated as medications in some countries, such as India and Germany, but as nutritional supplements in others. In the United States, most herbals are now controlled by the Dietary Supplement Health and Education Act (DSHEA), which treats them more like food additives than medications. However, given the pharmacological effects of various herbals, some health experts stress the significance of standardising herbal therapy.

Lim (1997) investigated the impact of a breakfast meal with 10 gm of dried hot red pepper on energy substrate consumption in male runners at rest and during activity (cycling at about 60 percent VO2max). In the red pepper trial, plasma adrenaline and non-epinephrine concentrations were significantly greater after 30 minutes of rest, but not after 60 or 150 minutes. The hot pepper meal significantly increased the respiratory quotient (RQ) and blood lactate levels at rest and during activity, but had no effect on oxygen intake or energy expenditure. These data show that, contrary to popular belief, eating spicy red pepper enhances glucose oxidation both at rest and during exercise. Furthermore, consuming spicy red pepper before training has been shown to diminish endurance performance in athletes due to muscle and/or liver glycogen depletion.

Ganguly et al. (2005) investigated the effect of Mimosa Pudicca root extract on vaginal estrous and serum hormones in albino mice to screen for antifertility efficacy. Rural Indians have historically used a number of plants as birth control. Mimosa Pudicca is a folk medicinal plant that is commonly used in India as an antifertility treatment. The current study was able to assess the plant's putative antifertility effect by conducting pharmacological research with the plant's root extract.

METHODOLOGY

Selection of Subjects

The study's subjects were 45 athletes from the University of Calicut who were enrolled in a professional programme in Physical Education. Only students who agreed to be subjects were chosen, and their ages ranged from 18 to 25. The subjects were informed about the nature of the investigation before being enrolled as subjects in this study, and their written agreement was acquired. The patients were then randomly assigned to one of three groups under double blind conditions: supplements, placebo, or control. All of the subjects lived in the university hostel, led normal lives, and participated in the same physical activity five days a week. Table 1 displays their average physical characteristics.

Table 1: The anthropometric data of the subjects selected for the study

Parameters	Total (N=45) (Mean)	Supplementation Group (Mean) N=15	PlaceboGroup (Mean) N=15	Control Group (Mean) N=15
Age (years)	22.25	22.48	22.83	22.42
Weight (Kg)	62.42	63.41	62.20	61.49
Height (Cm)	172.0	171.27	170.21	172.45
BMI (Kg/m^2)	18.62	17.23	17.69	17.84

The investigation was carried out after obtaining the appropriate approval from the head of the University of Calicut's Department of Physical Education. Subjects were also informed that they might withdraw their agreement at any time if they felt uncomfortable during the course of the study.

Selection of Variables

The researcher did a thorough analysis of the relevant literature and met with a number of Ayurvedic experts before deciding on this problem. Before the problem was finalised, its feasibility was thoroughly studied, including the availability of treatments, processes, and potential outcomes. After analysing the multiple components connected with the problem, the following variables were chosen for this study.

Physical Fitness	Cardio-respiratory Endurance
Physiological	Resting Pulse Rate
	Respiratory Rate
	Breath Holding Time
	Vital Capacity
	Systolic Blood Pressure
	Diastolic Blood Pressure

Since, Resting Pulse Rate, Respiratory Rate, Breath Holding Time, Vital Capacity and Blood Pressure are certain parameters or rather external signs of Cardio- Respiratory Endurance, they were also selected as variables for this study.

Selection of the Tests

The numerous factors in this investigation were measured using standard tests. Table 2 lists the variables that were chosen, as well as the tests and instruments that were employed.

Table 2: The list of selected variables and their respectiveTest and instrument used

Sl. No.	Variable	Test and Instrument used
Physical Fitness Variable		
1	Cardio- RespiratoryEndurance	12 minute Run /walk test (Cooper Test)
Physiological Variable		
5	Resting Pulse Rate	Palpation of radial artery at wrist
6	Respiratory Rate	Observing the raise and fall of theChest
7	Systolic Blood Pressure	Sphygmomanometer
8	Diastolic Blood Pressure	Sphygmomanometer
9	Breath Holding Time	Observing the duration of holding thebreath
10	Vital Capacity	Spirometer

Statistical Techniques

The data collected from the three groups before and after therapy were statistically analysed for significant differences in means using analysis of covariance (ANCOVA). The Scheffe's post-hoc test was then performed to examine if there were any meaningful differences between the adjusted post-hoc means if the F- ratio was significant. The significance level was set to 0.05. The data was examined using the statistical programme for social sciences (SPSS), with the threshold of significance set at 0.05.

RESULTS

Analysis of the Data

This study presents the results of the data analysis for the study. The purpose of the study was to see how Ayurvedic-Herbal Medicine "Lakshadi Choornam" (powder) containing ingredients 'Lassifer lacca' and 'Mymosapudica' affected Cardio-Respiratory Endurance. Several physiological variables, including resting pulse rate, respiratory rate, systolic blood pressure, diastolic blood pressure, respiratory rate, breath holding time, and the physical fitness variable cardio-respiratory endurance, were statistically examined.

Analysis of covariance was used to assess the mean differences between the three groups. The Scheffe's post-hoc test was then performed to examine if there were any meaningful differences between the adjusted post-hoc means if the F- ratio was significant. The significance level was set to 0.05.

Table 3: Analysis of Co-variance done among the differentgroups on Systolic Blood Pressure

	Control	Placebo	Exp-erimental	Source of Variance	Sum of Squares	df	Mean Squares	'F' Rati o
Pretest Mean	121.66	118.00	114.6667	Between	367.778	2	183.889	1.332
SD	11.751	13.9898	8.9576	Within	5796.667	42	138.016	
Posttest Mean	118.06	121.000	112.0000	Between	632.044	2	316.022	2.406
SD	9.6988	15.7208	7.2703	Within	5516.933	42	131.356	
Adjusted Posttest Mean	116.08	121.062	113.918	Between	400.685	2	200.343	2.209
				Within	3718.980	41	90.707	

The table 3 value required for significance at 0.05 level of confidence with df $_{(2,41)}$ is 3.230 and df $_{(2,42)}$ is 3.220. The F-ratio in the pre-test was 1.332 and in the post-test was 2.406, which were significantly less than the tabulated F (2, 42) of 3.220, as shown in the above table connected to the analysis of co-variance done among the different groups on Systolic Blood Pressure. It was just 2.209 in the Adjusted post-test, which was substantially lower than the calculated F(2,41) of 3.230. The post-hoc test was not performed since the F-ratio for the adjusted post-test was judged to be negligible.

Table 4: Analysis of Co-variance done among the differentgroups on Diastolic Blood Pressure

	Control	Placebo	Exp-erimental	Source of Variance	Sum of Squares	df	Mean Squares	'F' Rati o
Pretest Mean	79.6667	75.3333	74.6667	Between	221.111	2	110.556	1.039
SD	9.3478	11.0948	10.4312	Within	4470.000	42	106.429	
Posttest Mean	76.5333	78.0000	73.3333	Between	170.844	2	85.422	0.997
SD	8.7576	12.0712	5.8757	Within	3597.067	42	85.644	
Adjusted Posttest Mean	74.912	78.637	74.318	Between	163.853	2	81.927	1.409
				Within	2383.243	41	58.128	

The table 4 value required for significance at 0.05 level of confidence with df $_{(2,41)}$ is 3.230 and df $_{(2,42)}$ is 3.220. The F-ratio in the pre-test was 1.039 and in the post-test was 0.997, which were significantly less than the calculated F(2, 42) of 3.220, as shown in the above table connected to the analysis of co-variance done among the different groups on Diastolic Blood Pressure. The F-ratio in the modified

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post-test was only 1.409, which was significantly lower than the calculated F(2, 41) of 3.230. The post-hoc test was not performed since the F-ratio for the adjusted post-test was judged to be negligible.

Table 5: Analysis of Co-variance done among the different groups on Vital Capacity

	Control	Placebo	Exp-erimental	*Source of Variance*	*Sum of Squares*	*df*	*Mean Squares*	'F' Ratio
Pretest Mean **SD**	3700.00 560.61	3766.67 546.63	3616.67 673.92	Between Within	169444.44 14941666.	2 42	84722.22 355753.9	2.284
Posttest Mean **SD**	3573.33 353.99	3650.00 507.09	3740.00 524.13	Between Within	208777.78 9200333.3	2 42	104388.8 219055.5	0.477
Adjusted Posttest Mean	3570.08	3607.77	3785.46	Between Within	393994.56 4093792.9	2 41	196997.2 99848.61	1.973

The table 5 value required for significance at 0.05 level of confidence with df $_{(2,41)}$ is 3.230 and df $_{(2,42)}$ is 3.220. The F-ratis for the pre-test were 2.284 and for the post-test were 0.477, which were significantly less than the calculated F (2, 42) of 3.220, according to the above table connected to the analysis of co-variance done among the four groups on Vital Capacity. The adjusted post test, on the other hand, was only 1.973, which was much lower than the calculated F(2,41) of 3.230. The post hoc test was not performed since the F-ratio for the modified post-test was judged to be negligible.

Table 6: Analysis of Co-variance done among the different groups on Resting Pulse Rate

	Control	Placebo	Exp-erimental	*Source of Variance*	*Sum of Squares*	df	*Mean Squares*	F' Rati o
Pretest Mean **SD**	55.7333 6.7662	56.4667 10.5144	56.000 5.5162	Between Within	4.133 2614.667	2 42	2.067 62.254	0.033
Posttest Mean **SD**	53.8667 6.3117	54.8667 6.8229	55.6667 5.0943	Between Within	24.400 1572.800	2 42	12.200 37.448	0.326
Adjusted Posttest Mean	54.009	54.696	55.695	Between Within	21.567 1096.978	2 41	10.783 26.756	0.403

The table 6 value required for significance at 0.05 level of confidence with df $_{(2,41)}$ is 3.230 and df $_{(2,42)}$ is 3.220. The F-ratio for the pre-test was 0.033 and for the post-test was 0.326, which were much less than the tabulated F(2,42) of 3.220, as shown in the above table related to the analysis of co-variance done among the different groups on Resting Pulse Rate. The corrected post-test F-ratio, on the other hand, was just 0.403, which was significantly lower than the tabulated F(2, 41) of 3.230. The post-hoc test was not performed since the F- ratio for the modified post-test was judged to be negligible.

Table 7: Analysis of Co-variance done among the different groups on Respiratory Rate

	Control	Placebo	Supple-mentation	Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pretest Mean	15.8667	16.4667	16.5333	Between	4.044	2	2.022	0.163
SD	3.94365	3.02056	3.54293	Within	521.200	42	12.410	
Posttest Mean	17.0000	16.6889	16.3333	Between	3.378	2	1.689	0.188
SD	2.75162	3.01109	3.22195	Within	378.267	42	9.006	
Adjusted PosttestMean	17.327	16.595	16.144	Between	10.629	2	5.315	3.363*
				Within	64.802	41	1.581	

*Significant at 0.05 level

The table 7 value required for significance at 0.05 level of confidence with df $_{(2,41)}$ is 3.230 and df $_{(2,42)}$ is 3.220. The F-ratis for the pre-test and post-test were 0.163 and 0.188, respectively, in the above table relating to the analysis of co-variance performed across the four groups on Respiratory Rate, which were significantly lower than the calculated $F(2, 42)$ of 3.220. The corrected post-test F-ratio, on the other hand, was 3.363, which was significantly higher than the tabulated $F(2, 41)$ of 3.230. Because the adjusted post-test F-ratio was significant, the post-hoc test was used to determine whether there were actual differences between the matched means.

Table 8: Analysis of Co-variance done among the different groups on Breath Holding Time

	Control	Placebo	Supple-mentation	Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
PretestMean	63.6667	60.4667	60.8000	Between	92.844	2	46.422	0.404
SD	11.48705	9.38743	11.14963	Within	4821.467	42	114.797	
PosttestMean	66.0667	65.1333	72.2667	Between	450.978	2	225.489	1.934
SD	11.55401	8.11407	12.26183	Within	4895.600	42	116.562	
Adjusted PosttestMean	64.387	66.111	72.968	Between	614.129	2	307.065	8.018*
				Within	1570.135	41	38.296	

* Significant at 0.05 level.

The table 8 value required for significance at 0.05 level of confidence with df $_{(2,41)}$ is 3.230 and df $_{(2,42)}$ is 3.220. The F-ratis for the pre-test were 0.404 and for the post-test were 1.934, which were significantly

smaller than the tabulated F(2, 42) of 3.220, as seen in the above table connected to the analysis of co-variance done among the different groups on Respiratory Rate. The corrected post-test F-ratio, on the other hand, was determined to be 8.018, which was significantly larger than the tabulated F(2, 41) of 3.230. Because the F-ratio in the adjusted post-test was significant, the post-hoc test was used to see if there were any real differences between the matched means.

Table 9: Scheffe's Post-hoc test done on the three groups for differences among adjusted Post-test paired means on Breath HoldingTime

Adjusted Post-test Mean			Mean Differences	Critical Difference
ControlGroup	Placebogroup	SupplementationGroup		
64.387		72.968	8.581*	5.743
64.387	66.111		1.724	5.743
	66.111	72.968	6.857*	5.743

*Significant at .05 level.

The mean differences of 8.581 and 6.857, respectively, were substantially higher than the critical difference of 5.743, indicating that there are significant mean differences between the supplementation group and the control group and the supplementation group and the placebo group. However, no significant mean difference was discovered between the placebo and control groups, as the mean difference was only 1.724, much below the critical difference of 5.743.
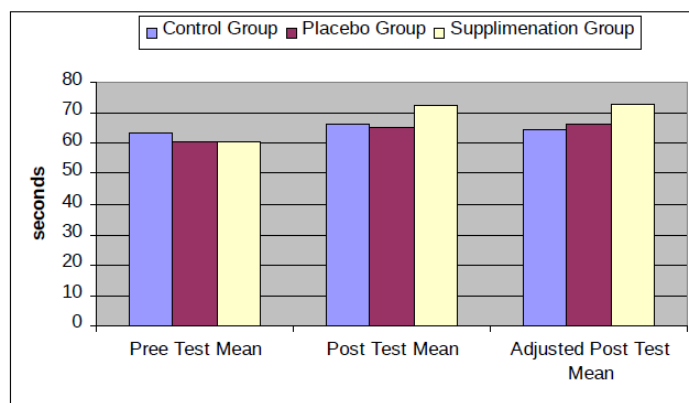

Figure 1: Graphical representation of the Pre-test, Post-test and adjusted Post-test means on Breath Holding Time of the three Different Groups

Table 10: Analysis of Co-variance done among the different groups on Cardio-Respiratory Endurance

	A	B	C	Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pretest Mean	2678.33	2664.67	2591.33	Between	65667.778	2	32833.889	.811
SD	187.9748	211.5881	203.2633	Within	1699880.000	42	40473.333	
Posttest Mean	2739.00	2794.33	2745.00	Between	27657.778	2	13828.889	.176
	257.6695	372.3999	173.7917	Within	3293903.333	42	78426.270	

SD								
Adjusted Posttest Mean	2713.70	2779.34	2785.29	Between	46534.843	2	23267.421	.410
				Within	2327702.227	41	56773.225	

The table 10 value required for significance at 0.05 level of confidence with df $_{(2,41)}$ is 3.23 and df $_{(2,42)}$ is 3.22. The F-ratis in the pre-test were 0.811 and in the post-test were 0.176, which were significantly less than the tabulated $F(2, 42)$ of 3.220, as shown in the above table connected to the study of co-variance done among the different groups on Cardio respiratory do. In the corrected post test, it was only 0.410, which was significantly lower than the $F(2, 41)$ tabulated value of 3.230. The post-hoc test was not performed since the F-ratio for the adjusted post-test was judged to be negligible.

DISCUSSION OF FINDINGS

The study's goal was to see how selected Ayurvedic-herbal medicine affected cardiorespiratory endurance performance. The researcher used ayurvedic-herbal medicines known as 'Lakshadi Choornam' (powder) containing 'Laccifer Lacca' and 'Mymosa Pudicca' as ingredients for this aim.

The evaluation of Resting Pulse Rate and Vital Capacity results in no significant variation between the three groups. This lends credence to the idea that Lassifer Lacca and Mymosa Pudicca have no influence on resting pulse rate or vital capacity. In Ayurveda, Laksadi Choornam can be given to improve the performance of the thoracic region, but there was no significant change in the Resting Pulse Rate and Vital Capacity, as the reason could be that the dose and duration of the medicine supplementation were insufficient, because the duration and dosage of the supplementation are normally determined by the severity of the illness. On the other hand, supplementation is given to healthy people in this study, and another reason could be that the duration and amount of supplementation are insufficient for healthy people to see a significant change in their outcomes.

The results of the Systolic and Diastolic Blood Pressure examination demonstrate that there is no significant difference between the three groups. This confirms the idea that Lassifer Lacca and Mymosa Pudicca had no influence on the participants' Systolic and Diastolic Blood Pressure.

The Respiratory Rate and Breath Holding Time tests reveal significant differences between the three groups. There was no significant change in Respiratory Rate between the control and placebo groups, nor between the supplementation and placebo groups, but there was a significant difference between the control and supplementation groups, rejecting the hypothesis. There were no significant variations in Breath Holding Time between the control and placebo groups. Significant differences were seen between the control and supplementation groups, as well as the supplementation and placebo groups, contradicting the hypothesis. This considerable difference could be attributed to the fact that Mimosa Pudica is a medicine commonly used to treat asthma, shortness of breath, and exhaustion in Lakshiadi Choornam. The herbal medicine is supplied to subjects with normal health, and they may have developed better Breath Holding Time and Respiratory Rate as a result of these therapeutic characteristics.

The study's ultimate goal was to determine whether Lakshadi Choornam (powder) had any effect on the individuals' Cardio-Respiratory Endurance. The Cardio-Respiratory Endurance test results show that there were no significant differences between the three groups. It implies that Lassifer Lacca and Mymosa Pudicca may have no effect on the subjects' Cardio Respiratory Endurance, hence supporting the idea.

According to Ayurvedic literature, Lakshadi Choornam (powder) is a sort of medicine classified as 'Balya' or 'Bala,' which means performance improving. Bala is known as 'Vyayam Shakthi' in Ayurveda, and athletic performance falls within this category. Physiological factors such as respiratory rate and breath holding time have demonstrated significant changes following the

administration of herbal medications. Even if there are some substantial changes in some Physiological variables, it may not be enough to generate a significant change in Cardio-Respiratory Endurance, and so it must be concluded that administration of Lakshadi Choornam (Powder) has no influence on Cardio-Respiratory Endurance.

CONCLUSION

The study's findings reveal that there was no significant difference in Resting Pulse Rate between the control group and the other two experimental groups because ingestion of Lakshadi Choornam with components Lassiffer Lacca and Mymosa Pudicca had no effect on Resting Pulse Rate.

The study's findings show that there was no significant difference in Vital Capacity between the control group and the other two experimental groups, and that ingestion of Lakshadi Choornam with components Lassiffer Lacca and Mymosa Pudicca had no effect on Vital Capacity.
The study's findings show that there was no significant difference in Systolic and Diastolic Blood Pressure between the control group and the other two experimental groups because the consumption of Lakshadi Choornam with ingredients Lassiffer Lacca and Mymosa Pudicca had no effect on Blood Pressure.

There was a significant difference in Respiratory Rate between the control and supplementation groups, as well as significant differences in the adjusted post–test averages of the two groups on Respiratory Rate by the ingestion of Lakshadi Choornam with components Lassiffer Lacca and Mymosa Pudicca.

The study found a significant difference in Breath Holding Time between the control and supplementation groups, as well as between the placebo and supplementation groups, as well as between the adjusted post-test means of the different groups on Breath Holding Time by consuming Lakshadi Choornam with ingredients Lassiffer Lacca and Mymosa Pudicca.

There was no significant difference in Cardio-Respiratory Endurance between the control group and the other two experimental groups, and consumption of Lakshadi Choornam with components Lassiffer Lacca and Mymosa Pudicca had no effect on Cardio-Respiratory Endurance of the patients.

Resting Pulse Rate, Breath Holding Time, Blood Pressure, and Vital Capacity, all of which have a direct relationship with Cardio-Respiratory Endurance performance, have not changed significantly. Breathe Holding Time and Respiratory Rate, on the other hand, revealed significant changes after supplementation. Even while some physiological features changed considerably after supplementation, it is possible that these changes were insufficient to generate significant changes in individuals' Cardio-Respiratory Endurance after supplementation with the Ayurvedic-herbal medicine Lakshadi Choornam.

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