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EFFECT OF BEETROOT SUPPLEMENTATION ON BLOOD PRESSURE OF LONG DISTANCE RUNNERS



Dr. Dileep Tirkey

Assistant Professor,

Lakshmbai National Institute of Physical Education, Gwalior (M.P.)

ABSTRACT

Thirty trained athletes (15 males and 15 females), 18 to 28 years of age were selected for the present study. Two experimental and two control groups were made consisting of males and females separately for seeing the effect of Beetroot supplementation was seen on Blood Pressure of long distance runners. In order to find out the effects of Beetroot Supplementation on Blood Pressure of long distance runners' descriptive statistics and analysis of covariance (ANCOVA) was used. The level of significance was set at 0.05 levels. No change in the blood pressure of the long distance runner was observed after they were given 250 ml beetroot juice/day for 15 days.

KEYWORDS : *statistics and analysis of covariance , Nutrition.*

INTRODUCTION

Nutrition is science of consuming and utilizing food as per requirement of the body, it deals with metabolic and physiological response of the body to food, which also include role of specific nutrient. Nutrition has become much focused and now is concerned with biochemical sequence through which various food articles are transferred from complicated form to simple form.

Good diet and nutrition can help enhance athlete performance. Eating a good diet with enough fluid provides energy to perform optimally in competitive sports as well as in a casual sports or activity. For athletes a varied healthy diet should provide vitamins and minerals along with carbohydrate, fat and protein. Every athlete strives to reach personal best and in the process he/she takes care of various factors like training, environment, psychological aspects etc. and along with these factors, nutritional aspect should be considered as important factor and an athlete should learn what to eat to yield best performance.

Rich vegetable diet has many benefits. All vegetables contain nitrate and it is found in large amount in beetroot and green leafy vegetables. Nitrate found in vegetables lower blood pressure. Consumption of vegetables has been thought to help in protection against various diseases like cardiovascular disease. The Beetroot juice which contains nitrate has been reported to increased plasma nitrate concentration, which leads to decrease blood pressure, inhibits platelet aggregation and prevent endothelial dysfunction (**Webb et al. 2008**).

Betaine is also a significant component of beet and it acts as osmoprotectant, that means it protect the cell against dehydration by acting as osmolyte which leads to increased water retention of cell.

Research have found that beetroot contain nitrate and dietary nitrate (NO_3^-) which might serve to maintain or improve blood flow to the skeletal muscles and leads to increased oxygen supply to skeletal muscles and many other physiological benefits which improves cardiovascular efficiency.

The beetroot, also known as the table beet, garden beet, red beet or informally simply as beet, is one of the many cultivated varieties of beets. The usually deep red roots of beetroot are eaten either boiled or roasted as a cooked vegetable, or cold as a salad after cooking and adding oil and vinegar, or raw and shredded, either alone or combined with any salad vegetable. A large proportion of the commercial production is processed into boiled and sterilized beets or into pickles. In the Eastern Europe, beet soup, such as borscht, is a popular dish. In Indian cuisine, chopped, cooked, spiced beet is a common side dish

Food supplements play a vital role in enhancing athletic performance. Athletic performance is being influenced by a number of factors, nutrition is an important factor which should be taken care of by athletes and sports personnel, they should explore the possibility of maximum advantage that can be gained by the same. Beetroot juice supplement is had shown beneficial in the improvement of the performances of the endurance athletes. In India, a few studies have been done on food supplementation and athletic performance. The scholar strives to study the effect of beetroot supplementation on blood pressure of long distance runners.

METHODOLOGY

Thirty trained athletes (15 males and 15 females), 18 to 28 years of age were selected for the present study. Two experimental and two control groups were made consisting of males and females separately. The effect of Beetroot supplementation was seen on Blood Pressure of long distance runners. For measuring the Blood Pressure (BP) an automated BP measuring machine (Dr. Morpen) was used. SBP and DBP were measured in millimeter of mercury (mmHg).

ADMINISTRATION OF PROGRAMME

Experimental group was administered 250 ml beetroot juice/day for 15 days. All the subjects were involved in regular athletics training program.

Research Design			
Group	Pre -Test	15 Days Training Programme	Post -Test
Experimental Group (15 Subjects)	BP	Beetroot Supplementation (250 ml/day at 2 pm) and regular training programme (Morning and evening session)	2. BP
Control Group (15 Subjects)	BP	Regular training programme (Morning and evening session) without any Supplementation.	2.BP

Statistical Procedure

In order to find out the effects of Beetroot Supplementation on Blood Pressure of distance runners' descriptive statistics and analysis of covariance (ANCOVA) was used. The level of significance was set at 0.05 levels.

ANALYSIS OF THE DATA AND RESULTS OF THE STUDY

The analysis of the data of the dependent variables i.e. Systolic & Diastolic Blood Pressure of Experimental and Control groups were computed by applying Descriptive statistics and the Analysis of Covariance (ANCOVA) to find out the significant improvement using SPSS Software version-16. The level of significance was set at 0.05 levels.

FINDINGS

Table - 1
Analysis of Covariance – Comparison of Adjusted Post Test Means of Systolic Blood Pressure in Experimental and Control Groups

Source	Sum of Squares	Df	Mean Square	f	Sig.
Contrast	44.004	1	44.004	.897	.352
Error	1324.381	27	49.051		

Insignificant at .05 levels

f value required to be significant at 1, 27 df = 4.21

Table revealed that the obtained 'f' value of 0.897 was found to be insignificant at 0.05 level, since this value was found lower than the tabulated value 4.21 at 1, 27 df.

Table - 2
Analysis of Variance – Comparison of Pre and Post Test Means of Systolic Blood Pressure in Experimental and Control Groups

		Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	38.533	1	38.533	.469	.499
	Within Groups	2301.333	28	82.190		
Post Test	Between Groups	4.800	1	4.800	.053	.819
	Within Groups	2532.667	28	90.452		

Insignificant at .05 levels

f value required to be significant at 1, 28 df = 4.196

In relation to pre test, table 2 revealed that the obtained 'f' value of 0.469 was found to be insignificant at 0.05 level, since this value was found lower than the tabulated value 4.196 at 1, 28 df.

In relation to post test, insignificant difference was found among experimental and control group pertaining to **Systolic Blood Pressure**, since f value of 0.053 was found insignificant at .05 level.

Table - 3
Analysis of Covariance –Comparison of Adjusted Post Test Means of *Diastolic Blood Pressure* in Experimental and Control Groups

Source	Sum of Squares	df	Mean Square	f	Sig.
Contrast	.598	1	.598	.014	.907
Error	1157.723	27	42.879		

Insignificant at .05 levels

f value required to be significant at 1, 27 df = 4.21

Table 8 revealed that the obtained 'f' value of 0.014 was found to be insignificant at 0.05 level, since this value was found lower than the tabulated value 4.21 at 1, 27 df.

Table - 4
Analysis of Variance – Comparison of Pre and Post Test Means of *Diastolic Blood Pressure* in Experimental and Control Groups

		Sum of Squares	df	Mean Square	F	Sig.
Pre Test	Between Groups	32.033	1	32.033	.334	.568
	Within Groups	2686.933	28	95.962		
Post Test	Between Groups	10.800	1	10.800	.119	.733
	Within Groups	2543.067	28	90.824		

Insignificant at .05 levels

f value required to be significant at 1, 28 df = 4.196

In relation to pre test, table 4 revealed that the obtained 'f' value of 0.334 was found to be insignificant at 0.05 level, since this value was found lower than the tabulated value 4.196 at 1, 28 df.

In relation to post test, insignificant difference was found among experimental and control group pertaining to ***Diastolic Blood Pressure***, since f value of 0.119 was found insignificant at .05 level.

RESULT OF THE STUDY

The result of the present study showed no change in the blood pressure of the distance runner after they were given 250 ml beetroot juice/day for 15 days. There was no significant difference found between the control and experimental group.

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