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## Effect of supplementation of soya multigrain panjiri on cardiovascular efficiency among women

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### Abstract

Anaemia is a major public health problem of the world today. Iron deficiency is most common cause of anaemia. Iron deficiency anaemia affects the physical capacity by reducing the availability of oxygen to the tissues which in turn affects the cardiovascular efficiency diet rich in iron place a very important role in improving the condition of India. Soya multigrain panjiri has been found to be a good source of essential amino acids and minerals like iron, calcium etc. The present study thus aims at finding out the effect of soya multigrain panjiri supplementation on cardiovascular efficiency among 50 hostellers anaemic women. Samples were selected by random sampling method. The subjects belonging to anaemic group were given supplementation of 75 gram soya multigrain panjiri for three months. The cardiovascular efficiency was measuring by modified Harvard step test prepared by Skubic and Hodgkins. Before and after Cardiovascular Efficiency of the subjects was measured prior to the commencement of study as well as after three months of supplementation. The result reveals that cardiovascular efficiency increased significantly after given supplementation of multigrain soya panjiri in subjects. It was concluded that dietary supplementation given to the subjects in the form of soya multigrain panjiri is useful in improvement their cardiovascular efficiency.

**Keywords:** cardiovascular efficiency, dietary supplementation, soya multigrain panjiri

### Introduction

Anaemia is indicated by a reduction in the concentration of haemoglobin in the peripheral blood flow than the expected normal levels for the specific age and sex of the individual.

Globally, anaemia affects 1.62 billion people, which corresponds to 24.8% of the population In India, the prevalence of anaemia is high because of low dietary intake, poor iron (less than 20 mg /day) and folic acid intake (less than 70 micrograms/day) Poor bio-availability of iron (3-4 percent only) in phytate fibre-rich Indian diet; Chronic blood loss due to infection such as malaria and hookworm infestations.

In India 60 to 90% of the population has iron deficiency anaemia of which 73% have anaemia due to nutrition deficiency.

The sequence of events in developing iron deficiency anaemia is usually as follows; when blood loss exceeds absorption, a negative iron balance exists. Iron is mobilized from stores, storage iron decreases, plasma ferritin decreases, iron absorption increases and plasma iron binding capacity increases. This stage is known as iron depletion.

Cardiovascular efficiency is one of the most important aspects of human life. In other words, we can define cardiovascular efficiency as endurance because both the terminologies are based upon our cardiac and respiratory functions. Endurance is largely based on our heart and lung capacity. Cardiovascular endurance may be described as the capacity of the heart and circulatory system to furnish the fuel and oxygen to the working muscles in IDA, the decrease in Haemoglobin reduces the availability of oxygen to the tissues, which in turn affects the cardiac endurance.

Cardiovascular endurance may be described as the capacity of the heart and circulatory system to furnish the fuel and oxygen to the working muscles. Cardiovascular fitness is the ability of the organism to maintain the various equilibria within the body as closely as possible to the resting state during sub maximal task and to restore promptly after exercise and equilibria which have been disturbed. The lungs heart and blood vessels perform a vital function as the body's supply system. They supply the muscle with necessary fuels and oxygen and carry away the waste products such as carbon dioxide and lactic acid.

To test the cardiovascular capacity or cardio respiratory fitness the best suited test is modified Harvard step test.

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**Department of family welfare** has completed and published the data on prevalence of anaemia in preschool children, adolescent girls and pregnant women. The survey showed that prevalence of anaemia is very high i.e. over 90% in all these groups.

A study carried out by Vijayalakshmi *et al* on anaemia and work output on adolescent shows that anaemia decreases productivity while supplementation with iron improves work output.

A study was done by Edgerton, U.R. *et al* on iron deficiency anaemia and its effect on subjects productivity and activity pattern. They had the contention that the correlation of iron deficiency anaemia enhances work output of the sustained endurance type.

NIN suggests a criterion for diagnosis of anaemia according to haemoglobin level. Anaemia is mild whenever haemoglobin level is 10.0 to 11.9 g/dl, moderate when haemoglobin level is between 8.0 to 9.9 g/dl and severe when haemoglobin level is less than 7.9 g/dl.

A study was done by Dr. Nanda Gurwara (2002) [5]. In this study she found anaemia and cardiovascular efficiency effect on adolescent girls of different socio economic status.

Study was done by Dr. Nanda Gurwara (2016) [6]. In this study they found that soya multigrain panjiri supplementation is useful in boosting in haemoglobin levels.

**Objectives**

- To know the impact of soya flour supplementation on cardiovascular efficiency.
- To introduce a low cost soya multigrain panjiri recipe for improving the health status of individual.

**Method and Procedure**

A pre- test post - test 50 subjects was taken for the study. The study was conducted on 50 anaemic women. At first the cardiovascular efficiency was measured by modified Harvard step test. An iron rich nutritious soya multi grain panjiri was

prepared for the purpose of supplementation to the subject. 75 g (one small katorie) of panjiri measured on electronic weighing machine and packed for each sample per day. The supplementation was given for the period of three months after the supplementation period, again cardiovascular efficiency of subjects was done to find out the effect of soya multigrain panjiri supplementation on them and found that cardiovascular efficiency has been extremely changed low to normal, normal to high.

**Methods Followed For Undertaking the Study**

- **Cardiovascular Efficiency** - This is to be measured by Harvard Step Test (prepared by Skubic and Hodgkins).An 18 inch bench was used for exercising. The maximum duration of exercise was 3 minutes. Only one pulse count was taken. The pulse rate was felt at the carotid artery and was converted from one to one and half minutes after exercise. The same procedure was applied for subject who stopped before the end of 3 minutes and measured cardiovascular efficiency of the subjects.
- **Supplementation** - For the purpose of providing iron rich supplementary food to the subject to see its impact on cardiovascular efficiency, a low cost Soya Bean+Multigrain panjiri was prepared. Daily 75gm provided to each subject conditioned to consume it on that particular day. Before supplementation deworming was done.
- **Post Measure of cardiovascular efficiency** – After 3 months of giving supplementation again cardiovascular efficiency of the subjects was measured for founding the effect of soya multigrain panjiri.
- **Statistical Analysis** - All scores namely cardiovascular efficiency and reproductive health status of 50 samples were tabulated and put to appropriate statistical treatment

**Results and Discussion**

**Table 1:** Pre Post Mean Scores on Cardio Vascular Efficiency Score among Selected Subjects

Variables	Pre Test (n=50) Mean±S.D.	Post Test (n=50) Mean±S.D.	Mean Difference	‘t’
30 sec. Recovery Pulse	58.92 ± 2.65	53.42 ± 2.59	5.50	20.84**
Duration of Time	169.52 ± 5.55	177.57 ± 3.40	-8.04	13.27**
Cardio Vascular Efficiency Score	52.46 ± 3.66	60.61 ± 3.71	-8.14	22.13**

\*\* Significant at .01 level (df=49) = 2.62

A perusal of entries reported in table # 1 gives following inferences:

➤ **30 sec Recovery Pulse**

Post test 30 sec. recovery pulse rate of the selected subjects was found to decrease significantly in subjects belonging to subjects. The mean pre test 30 sec. recovery pulse was 58.92 while to post test mean 30 sec. recovery pulse was 53.42. The mean difference of 5.50 and associated t value of 20.84 which is statistically significant at .01 confirms that after the supplementation of soya multigrain panjiri subjects were able to return to their resting heart more quickly as compared to their pre test measures.

➤ **Duration of Time**

The time of stepping or exercise has also been increased in subjects who were supplemented with soya multigrain panjiri. The mean pre test time was recorded as 169.52 while the post test mean timing was recorded as 177.57. The obtained

t=13.27 which is statistically significant at .01 level also shows that duration of exercise has increased significantly after supplementation of soya multigrain panjiri for certain duration.

➤ **Cardiovascular Efficiency Score**

The cardio vascular efficiency score of selected subjects also showed significant increase in terms of their pre-post test mean scores. The calculated t=22.13 indicate that post test mean cardio vascular efficiency scores of subjects was found to be significantly better (M=60.61) as compared to their pre test mean cardio vascular efficiency scores (M=52.46) at .01 level of statistical significance.

The results showed the efficacy of supplementation of soya multigrain panjiri in terms of enhancing the cardio vascular efficiency of selected subjects.

**Results**

The supplementation of soya multigrain panjiri was found to be effective in improvement in cardiovascular efficiency score.

### Conclusion

The study concluded that this soya multigrain panjiri supplementation helps to improve the cardio vascular efficiency and also health of women. The low cost recipe of soya + multigrain panjiri can easily be made in homes and can be easily consumed.

This supplementation if continued would help in improving the overall physical and mental health of the subjects which would further help in building a strong nation.

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