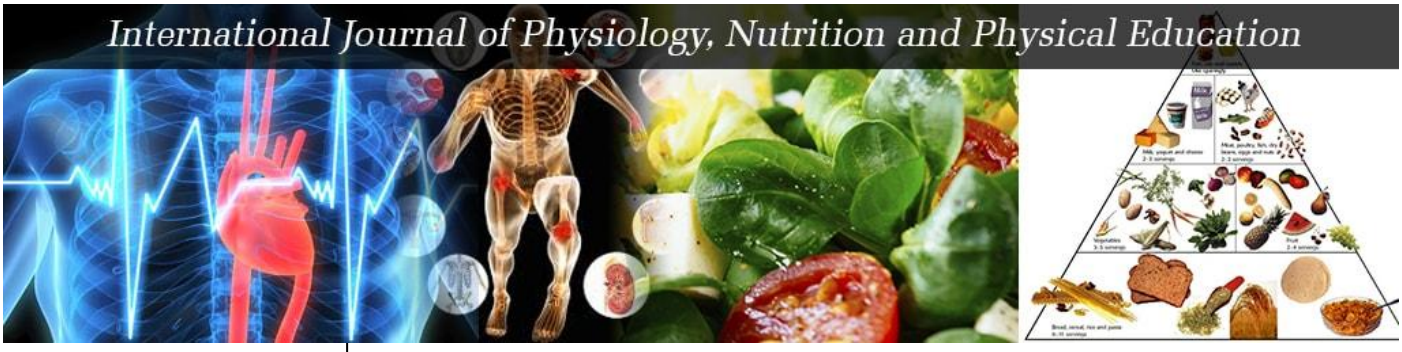

ISSN: 2456-0057
IJPNPE 2017; 2(2): 697-701

www.journalofsports.com
Received: 08-05-2017
Accepted: 09-06-2017

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Effect of selected micronutrient supplementation on sprint and endurance running performance of varsity students

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Abstract
Competition in sport has created an environment of rivalry and antagonist attitude among sport persons. The acute competitiveness indulged sports persons to the use of illegal ergogenic materials or drugs for unusual development of performance. This approach has led to the formation of anti-doping legislation and related penalizations. Hence presently the situation has changed and the athletes to a great number are shifting towards use of legal vitamin and mineral supplements for better performance. Several research studies have been conducted in the very area but the scientists are of the view that more studies are required in this area to bridge the gap in knowledge. The above concept gives rise several queries related to supplementation of vitamins and minerals and their effect on athletic performance. Considering the importance the author designed to conduct the study entitled "Effect of selected micronutrient supplementation on sprint and endurance performance of varsity students". In the study the author selected 30 boys and 30 university females of the department of Physical Education as subjects, as a screening the investigator conducted a preliminary test for them and based on the result of that the boys were supplemented with Vitamin C and the girls with Mineral iron for 2 weeks. The study was experimental in nature and an initial test was conducted for speed and endurance running at the beginning followed by the same tests after 2 weeks supplementation program. From data analysis it was observed that the supplementation had positive effect on performance in speed running but did not show positive impact on endurance running ability.

Keywords: Micronutrient, supplementation

Introduction

Background of study

Vitamins and minerals are essential components of food and not only have wide range of positive impact on overall metabolic process of and individual but also have many benefits on physical as well as and physiological performance of people. It is clear from literature that many of the athletes often face deficiencies which are overlooked. It is also evident that a close watch on the deficiencies and their recovery through supplementation may aid in the fitness performance of the children. Vitamin supplementation, particularly when limited to 100 percent of the RDA for each vitamin, is generally regarded as safe. However, excess amounts of several vitamins may contribute to serious health problems and tolerable upper limits (UL) have been established for many vitamins. The review of literature also reveals that the studies conducted in the area are not sufficient and more number of studies is required to bridge the gap of knowledge. Considering the above facts the author endeavored to conduct a study on the topic "Effect of selected micronutrient supplementation on sprint and endurance performance of varsity students".

Sport and supplementation

Sports success is dependent primarily on genetic endowment in athletes with morphologic, psychologic, physiologic and metabolic traits specific to performance characteristics vital to their sport. Such genetically-endowed athletes must also receive optimal training to increase physical power, enhance mental strength, and provide a mechanical advantage. However, athletes often attempt to go beyond training and use substances and techniques, often referred

to as ergogenics, in attempts to gain a competitive advantage. Pharmacological agents, such as anabolic steroids and amphetamines, have been used in the past, but such practices by athletes have led to the establishment of anti-doping legislation and effective testing protocols to help deter their use. Thus, many athletes have turned to various dietary strategies, including the use of various dietary supplements (sports supplements), which they presume to be effective, safe and legal. Journal of the International Society of Sports Nutrition. 1(2):1-6, 2004.

Purpose of study

The purposes of my study are as follows:

1. To determine the effect of vitamin C supplementation on sprint running performance of male varsity students.
2. To determine the effect of vitamin C supplementation on endurance running performance of male varsity students.
3. To determine the effect of iron supplementation on sprint running performance of female varsity students.
4. To determine the effect of iron supplementation on endurance running performance of female varsity students.

Significance of Study

1. The findings of the study will pave the way for coaches and athletes to avoid illegal ergogenic aids in athletic training and support the athletes with legal vitamin and mineral supplements.
2. The findings will show the way to deal with the vitamin and mineral deficiencies of athletes.
3. The findings will also help the sport arena to gather knowledge related to the beneficial vitamins and minerals and their justified use in favor of the athletes.

Design of study

The study is experimental in nature incorporating pre test and post-test design. An initial screening was executed to have some idea regarding the deficiencies of the subjects and based on the degree of deficiency and medical experts the investigator used supplementation of vitamin C for males and Iron from females. Initially the speed and endurance performance of the subjects were recorded and the males and females were provided with supplementation of respective vitamins and minerals for 2 weeks and thereafter the tests for the following performances were recorded finally to see the difference.

Criterion measure

Personal data: Age in yrs, Height in cms, Weight in kgs
Physical fitness variables

S. No.	Variable	Test of assessment
1	Speed	50 mt dash
2	Endurance	12 mins run and walk

Data analysis: The data accumulated were analyzed will the help of SPSS software version 19.

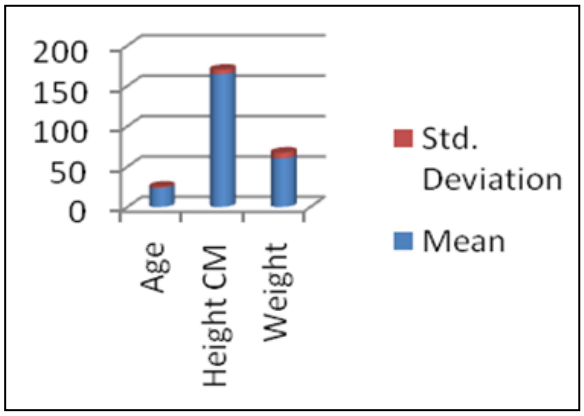
Result and discussion

In this part of the thesis the results have been presented in tabular form and related discussion has been made.

Table 1: Descriptive Statistics of age, height and weight for boys

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	30	21	26	23.73	1.337
Height CM	30	152.27	177.94	164.6027	5.39274
Weight	30	44	81	60.33	6.930

Bar diagram showing mean age height and weight of boys

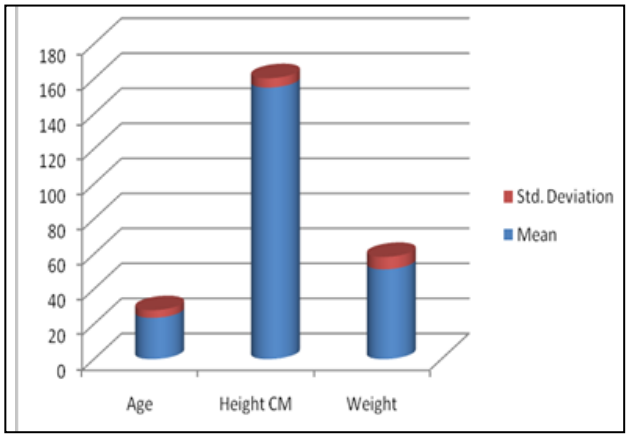


According to table no 1 the mean age of the boys is 23.73 yrs, mean height is 164.60 cms and their mean weight is 60.33.

Table 2: Descriptive Statistics of age, height and weight for girls

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	30	2	28	23.57	4.352
Height CM	30	147.00	170.00	155.0507	5.34242
Weight	30	38.0	70.0	51.293	7.0487

Bar diagram showing mean and SD for age height and weight of girls



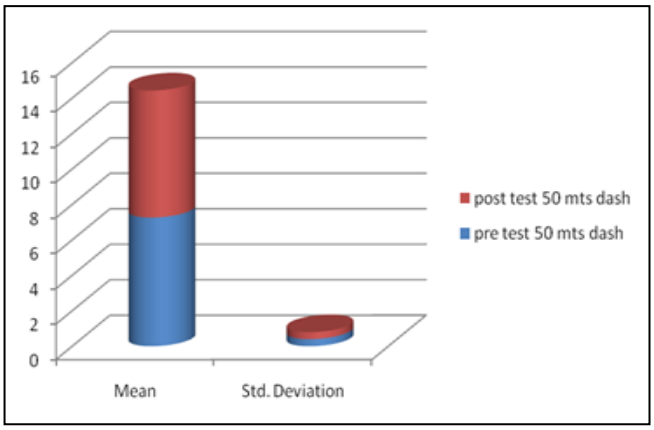
According to table no 2 the mean age of the girls is 23.57 yrs, mean height is 155.05 cms and their mean weight is 51.29.

Table 3: Descriptive Statistics for pre-test of boys in 50 mt dash and 1 mile run performance

variables	N	Minimum	Maximum	Mean	Std. Deviation
50 Yds	30	5.89	7.90	7.2617	.40000
1Mile	30	5.53	10.07	6.6153	.78083

According to table no 3 the pre-test mean value of 50 yds dash test of the boys is 7.26, and mean value of 1mile run test is 6.6153.

Bar diagram showing mean and SD for pre and post-test of boys 50 mts dash & 1 mile run.



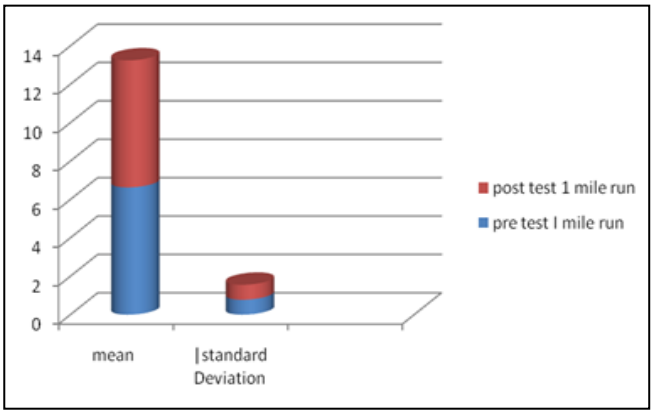


Table 4: Descriptive Statistics for post-test of boys in 50 mt dash and 1 mile run performance

	N	Minimum	Maximum	Mean	Std. Deviation
50 Yds	30	5.85	7.88	7.1690	.39253
1Mile	30	5.52	10.04	6.6323	.77784

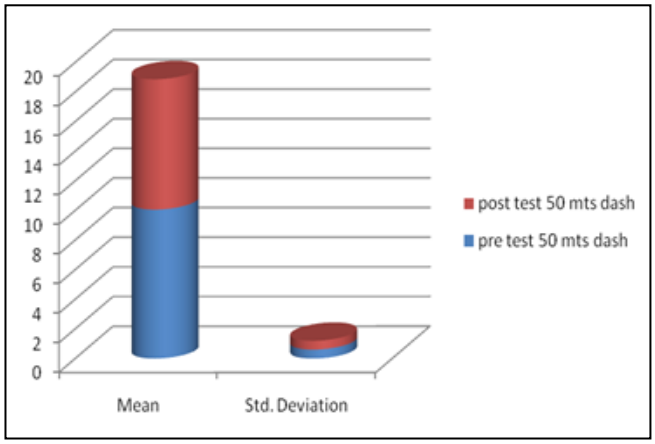
According to table no 4 the post-test mean value of 50 yds dash test of the boys is 7.16, and mean value of 1mile run test is 6.6323.

Table 5: Descriptive Statistics for pre test of girls in 50 mt dash and 1 mile run performance

	N	Minimum	Maximum	Mean	Std. Deviation
50 Yds	30	7.62	10.06	8.8813	.60622
1Mile	30	9.01	11.03	9.8593	.46755

According to table no 4 the pre test mean value of 50 yds dash test of the girls is 8.88, and mean value of 1 mile run test is 9.85.

Bar diagram showing mean and SD for pre and post-test of girls 50 mts dash & 1 mile run.



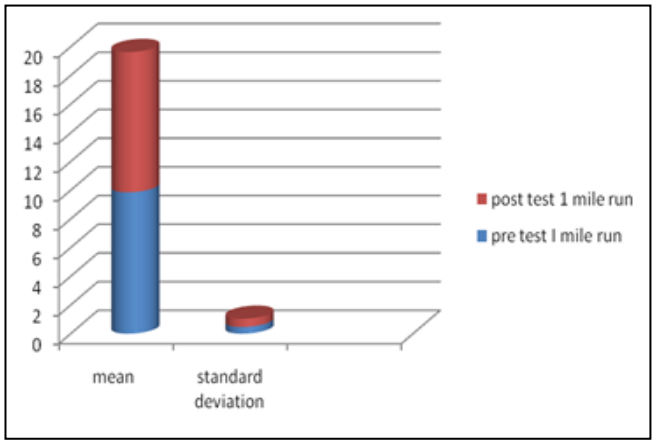


Table 6: Descriptive Statistics for post-test of girls in 50 mt dash and 1 mile run performance

	N	Minimum	Maximum	Mean	Std. Deviation
50 Yds	30	7.58	10.02	8.8013	.58966
1Mile	30	8.00	11.03	9.7740	.57554

According to table no 4 the post-test mean value of 50 yds dash test of the girls is 8.88, and mean value of 1 mile run test is 9.77.

According to table no 4 the pre test mean value of 50 yds dash

Table 7: Paired Samples t Test between pre and post-test in 50 mts run boys

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	50 Yds – 50 Yds	.09448	.11624	.02158	.05027	.13870	4.377	28	S

From table no 7 it is clear that the difference between pre and post-test in 50 mts run for boys have a significant difference at 0.00 level.

Table 8: Paired Samples t Test between pre and post-test in 50 mts run girls

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	50 Yds - 50 Yds	.08069	.11569	.02148	.03668	.12470	3.756	28	S

From table no 8 it is clear that the difference between pre and post-test in 50 mts run for girls have a significant difference at 0.00

level.

Table 9: Paired Samples t Test between pre and post-test in 1 mile run for boys

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	1Mile - 1Mile	-.02069	.18727	.03478	-.09192	.05054	-.595	28	NS

From table no 9 it is clear that the difference between pre and post-test in 1 mile run for boys have no significant difference.

Table 10: Paired Samples t Test between pre and post-test in 1 mile run for girls

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	1Mile - 1Mile	.08759	.25565	.04747	-.00966	.18483	1.845	28	NS

From table no 10 it is clear that the difference between pre and post-test in 1 mile run for girls have no significant difference.

Evans noted that several antioxidants, including vitamin C and especially vitamin E, have been shown to decrease the exercise-induced increase in the rate of lipid peroxidation, which could help prevent muscle tissue damage.

Ji notes that the aging process lessens the exercise training-induced improvement in natural antioxidant enzymes and suggests exercise training in older athletes might be assisted with antioxidant supplementation in attempts to optimize defense.

Vitamin C supplementation has been shown to improve physical performance in vitamin C-deficient subjects, but several major reviews support the general conclusion that vitamin C supplementation does not enhance physical performance in well-nourished individuals.

Dekkers and others concluded that dietary supplementation with antioxidant vitamins has favorable effects on lipid peroxidation and exercise-induced muscle damage and recommend vitamin supplementation to individuals performing regular heavy exercise.

Evans noted that several antioxidants, including vitamin C and especially vitamin E, have been shown to decrease the exercise-induced increase in the rate of lipid peroxidation, which could help prevent muscle tissue damage.

Principle findings and Conclusion

1. Vit C supplementation has significant effect on enhancing speed performance of boys.
2. Iron supplementation has significant effect on enhancing speed performance of girls.
3. Vit C for boys and iron supplementation did not show any significant difference in endurance running performance.

The findings of the renowned researchers somehow reveal that Vitamin C has positive impact on athletic performance of people.

Thus from the findings of the eminent researchers it is somehow clear that both iron and vit c play positive role in athletic performance which is similar with the findings of the present study.

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