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## Status of serum calcium in football players at different levels of participation

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### Abstract

**Background:** The sports scientists, trainers, coaches and dietitian throughout the world are working to find out the methods to cap-up the physiological and psychological demand of such competitive sports like football. The purpose in the present study had made an attempt to find out the concentration of calcium (the most important electrolyte) in the blood of football players participating at different levels i.e.-inter-University future college level players and that of Non-Sportsman also.

**Material and Method:** To fulfill the purpose of study total blood sample of 115 at different levels that ages were above 17 years has been collected. For the collection of blood sample the investigator has visited Kurukshetra. University and maharishi Dayanand University football coaching camp, inter-college tournament and the blood sample of Non Sportsman were collected from various colleges with the help of trained technician. Statistical technique 't' test was used to compare the data. Level of significance was at 0.01 level.

**Result:** After analysis the date no significant difference between Concentration of calcium present in the blood of Non-Sportsman and inter college level players. Where a significant difference was found between Non-sportsman and inter-university level football players as in the both groups, the mean difference is in Favor of inter-university level players. So we can conclude that football players participating at inter-university level are having significantly better concentration of calcium in their blood as compare to the Non-sportsman similarly a significant difference was found in the concentration of calcium in between inter-college and inter-university level football players. Again we can conclude that inter-university level players were having significantly batter concentration of calcium in their blood as compare to inter college level. We can also conclude that as the level of performance improve the concentration of calcium also improve in their blood serum.

**Keywords:** serum calcium concentration, Sports man, Non-sports man, football

### Introduction

Energy requirements of an individual is the level of energy intake from food that will balance expenditure when the individual has a body size and composition, level of physical activity, consistent with long term good health and that will allow for the maintenance of economically necessary and socially desirable physical activity.

For serious competitive athlete concerns about energy go beyond health or socially desirable physical activity. It is imperative that energy intake supports training and competitive schedule which will allow the athlete to achieve his best. Coaches, athlete and sports scientists are all interested in fulfilling the energy requirement of athlete more adequately. They had come to a conclusion that specific types of training require specific type of diet for specific type of sports.

In India, we have realized that emphasis should be given toward the physiological effects of diet and nutrition's on training of an athlete. Numerous diet surveys suggest the need of adopting systematic approach of diet intake and training of athletes. This blood constituent plays an vital role in the maintenance of the high level of working capacity in the athlete. Minerals are a part of enzymes, hormones and vitamins; they are found in muscles connective tissues and in all body fluids. Among this  $Ca^{++}$  play much vital role in our body. Function of this mineral is metabolism and to provide structure in the formation of bones and teeth. Different studies suggested that concentration of this mineral in the blood of sportsman in much higher than Non-Sportsman.

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### Calcium

Calcium is the rich mineral in the body. It makes 39% of the total body minerals in which 99% of the calcium is present in the body in form of bones and teeth and remaining 1% in the blood and extra-cellular fluids and in the soft tissue cells where it regulates many important metabolic functions. So it makes up to 1.5 to 2% of the body weight.

### Football

Football is such a competitive game which put very high level of physiological and psychological demand on players. The sports scientists, trainers, coaches and dieticians throughout the world are working to find out the method to cop-up these demand. In India till date list of work has been done in the psychological and physical experts of football player, but rare work is found on the nutritional aspects of football players. The present work is an attempt to study the electrolyte status of football players and Non-Sportsman also.

The present work entitled as "Status of Serum Calcium in Football Players of Different Level of Participation"

### Objectives

To find out the concentration of selective electrolyte (Calcium) in the blood of Non-Sportsman and football players participating at different levels.

To find out difference in the concentration of selective electrolyte in the blood of Non-Sportsman and football players participating at different levels.

### Hypothesis:

There exists a significant difference in the concentration of selective electrolyte in the blood of non-sportsman and football players participating at different levels.

### Delimitations:

The study was confined to 40 non-sportsman and 75 football players above age group of 17 years and further delimited to blood electrolyte (Ca).

### Limitations:

The nutritional intake, heredity, life style, training and psychological traits of the subjects were beyond the control of work.

### Definitions of the Terms Used:

- Selective Electrolyte:** It refers to calcium present in the blood.
- Level of Participation:** Football players participating at Inter College level and Inter University level in Haryana state.

#### Significance of different in the mean concentration of serum calcium between Non-sportsman & Inter college football players.

Serum Electrolyte	No. of Non-Sportsman	No. of Inter College Players	Mean of 1 <sup>st</sup> group	Mean of 2 <sup>nd</sup> Group	Mean Different	SD of 1 <sup>st</sup> group	SD of 2 <sup>nd</sup> Group	S.E.D	T
Calcium	40	39	9.28	9.34	0.06	0.79	0.68	0.163	0.36

\*\* Not significant at 0.01 level

#### Significance of different in the mean concentration of serum calcium between Inter College & Inter University football players.

Serum Electrolyte	No. of Inter college players	No. of Inter University players	Mean of 1 <sup>st</sup> group	Mean of 2 <sup>nd</sup> group	Mean Different	SD of 1 <sup>st</sup> group	SD of 2 <sup>nd</sup> group	S.E.D	T
Calcium	39	36	9.34	0.68	0.86	0.68	0.81	0.145	5.93**

\*\*significant at 0.01 level

- Non Sportsman:** Boys who had never ever participated in any competitive sports.

### Collection of data

#### Significance of the Study

The result of the study will provide guideline for assessing the physical fitness of football players on the basis of concentration of electrolyte.

Results will provide knowledge about the effect of exercise on the electrolyte concentration present in the blood of football players.

### Method and procedure

#### Selection of subjects

In present study purposive sampling method had been used for the collection of data. To fulfill the purpose of study total blood sample of 115 Non-Sportsman and football players participating at different levels has been collected.

S.no.	Levels of participation	No. of subjects
1	Non-Sportsman	40
2	Inter-College level	39
3	Inter-University level	36
	Total	115

For the collection of blood sample the investigator has visited coaching camps:-

- Kurukshetra University, Kurukshetra and Maharishi Dayanand University, Rohtak football team coaching camp and Inter college tournaments.
- The blood sample of non-sportsman were collected from D.A.V College, Pundri (ktl).

### Statistical technique used

In order to analysis the data in the present study software of following statistically technique were used in computer.

- Mean
- Standard deviation
- Standard error deviation (S.E.D)
- T-test

### Analysis of data:

#### Mean concentration of serum calcium present in different categories.

S.No.	Categories	No. of subject	Calcium
1	Non-sports man	40	9.28mg/Dl
2	Inter college level	39	9.34mg/dL
3	Inter university level	36	10.2mg/Dl

**Significance of different in the mean concentration of serum calcium between Non-sportsman & Inter university football player.**

Serum Electrolyte	No. of Non-sportsman	No. of Inter University players	Mean of 1 <sup>st</sup> group	Mean of 2 <sup>nd</sup> group	Mean Different	SD of 1st group	SD of 2nd group	S.E.D	T
Calcium	40	36	9.28	10.20	0.92	0.79	0.81	0.153	6.01**

\*\*significant at 0.01 level

**Discussion of result**

After analyses of data we found no significant difference between concentration of calcium present in the blood of non-sportsman and football players participating at Inter-College level. Where a significant difference was found between Non-Sportsman and Inter-University level players as in the both group, the mean difference is in favor of Inter-University level players. So we can conclude that football players participating at Inter-University level are having significantly better concentration of calcium in their blood as compare to the Non-Sportsman. Similarly a significant difference was found in the concentration of calcium between football players participating at inter-College level and Inter-University level and mean difference in favor of Inter-University level players. Again we can conclude that football players participating at Inter-University level were having significantly better concentration of calcium in their blood as compared to the football player participating at Inter College level. We can conclude that as the level of performance improve the concentration of calcium in the blood also improve. It is noted from the data that Non-Sportsman and football players participating at Inter-College level are calcium different.

The increased level of calcium in the blood of footballers participating at higher level in controlling the muscular movement for better performance during the match. From these results it is clear that calcium in footballers play's important role for better performance. Finding of present study is supported by Kaur R (1992), Kaur N (1994)<sup>[3]</sup>, Malik (2003), Turgut *et al.* (1999)<sup>[6, 11]</sup>, Vora *et al.* (1983)<sup>[14]</sup>.

**Conclusions:**

- 1 As the performance level improves the concentration of calcium in the blood of football players also improves.
- 2 Non-Sportsman and football players participating at Inter College level have almost same concentration of calcium in their blood.
- 3 Football players participating at Inter-University level are having significantly better concentration of calcium as compare to the Non-Sportsman and football players participating at inter college level.

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