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EFFECT OF CONSUMPTION OF BEETROOT JUICE ON VO2 MAX IN FOOTBALL PLAYERS

Home Science

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ABSTRACT

The beneficial effect of beetroot juice has been tested during cycling, walking, and running. The purpose of the present study was to investigate whether beetroot can improve the performance in footballers. Twenty one male footballers were recruited and first beep test was assessed done to assess the vo2 max in footballers without drunken beetroot juice. Second beep test was done after five days of consumption of beetroot juice. They were consuming 300ml beetroot juice on daily basis. Result as showed that volume of oxygen was significantly increased after consumption of beetroot juice as compared to first beep test. The mean ± standard deviation (SD) value of vo2max before consumption of beetroot juice was (36.219±6.613) and after consumption of beetroot juice vo2 max was increased the value of VO2 max was (40.219±6.031). The other variables lacked a statistically significant effect with beetroot juice. The present investigation provides evidence that positively affects performance of footballers and increases the maximum volume of oxygen consumption. To the best of our knowledge this is the first study to investigate the effect on beetroot juice on vo2 max in male footballers.

KEYWORDS

beetroot juice, VO2max, football players, Beep test

INTRODUCTION

Running -at any intensity- for 90 minutes requires a high level of stamina. Therefore, football players often have a tremendous amount of aerobic capacity- being able to go from walking to sprinting and have a fast recovery to do it again, and again, and again. Aerobic exercise involves repeated movement of muscles in the arms, and legs. Simple activities such as walking, bicycling or swimming are good examples of aerobic exercise that can be done at any age.

Football is a strength and power-contact sport, involving high-intensity activity, training and competition. Matches involve intermittent high-intensity sprints between periods of jogging and walking and repeated physical contact.[1] Advances in the understanding of exercise physiology have made it possible to make concrete and specific recommendations to athletes about their special nutritional needs and the dietary practices that help to optimize sports performance [2]

Nutrition and the dietary requirements for sports events require careful programming. The body requires food not only for energy but also for anabolic and reparative processes. The link between overtraining and a depressed immune state is also an area of recovery being addressed through nutrition. A poor or inadequate diet can lead to fatigue, irritability, and sometimes to eating disorders such as anorexia[7]

Beetroot is one of the more popular natural foods considered to help athletic performance is beetroot. Beetroot is an excellent source of antioxidants and micro- nutrients, including (in descending order by weight) potassium, betaine, sodium, magnesium, vitamin C, and nitrate (NO_3) and contains 29 kcal per 100 g [13] Beetroot juice is improve the performance of both aerobic and anaerobic exercise are reported via numerous proposed mechanisms, the impact of beetroot juice serving as a potent dietary antioxidant must be explored [3]

Nitric oxide (NO) has an important role in the regulation of many body functions including muscle contractility, metabolism, neuronal activity and host defense. NO is produced by NO syntheses during the catalysis of L-arginine to l-citrulline Nitric oxide syntheses dependent and due to ingestion of nitrate- rich foods via the reduction of nitrate to nitrite. Increased Nitrate availability may enhance oxygen and nutrient delivery to active muscles and thereby lower the ATP cost of muscle force production and improve the physiological responses related to endurance performance and recovery [4,5]

Vo_2 max is usually measurement of maximal oxygen intake requires two or more tests of maximal exercise to demonstrate an asymptotic relationship between intake and work load.' It is of interest, therefore, to report that maximal oxygen intake can be measured in a single testing procedure, when a multistage treadmill test of uninterrupted sub maximal and maximal exercise is utilized[6].

Beep test is a field test to estimate aerobic power and predict VO_2max. The test is made up to 21 exercise levels. Each level comprises a series of 20 meters shuttle runs. The audio CD sounds a “beep” at designed time intervals, with every level, the “beep” progressively got faster prompting the athlete to increase running speed.

METHODOLOGY

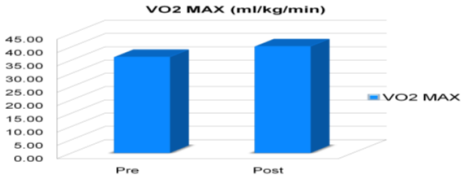
The study was divided into 5 phases. Phase I includes the locale of the study was selected. The II phase includes sample selection of the study was done 21 football players were selected from the sports academies from south zone of Delhi region. In III phase the samples were selected randomly. In IV phase, first beep test assessed done to assess the vo_2 max in footballers without drunken beetroot juice. Second beep test was done after five days of consumption of beetroot juice. They were consuming 300ml beetroot juice on daily basis. In V phase the results were statistically analyzed by t-test.

RESULTS AND DICUSSUION

The purpose of the study was to see the effect of consumption of beetroot juice on vo_2max (ml/kg/min) in footballers. Height, Weight and BMI was assessed and checked that beetroot juice has more impact on the endurance level of players.

The study included the data of twenty one male footballers. Vo_2max (ml/kg/min) was measured on day one after matching with inclusion and exclusion criteria. Then on fifth day Vo_2max (ml/kg/min) was again measured after consumption of beetroot juice. They were consuming beetroot juice till fifth day. Beep test was used to measure the maximum volume of oxygen consumption (ml/kg/min).

TABLE.1 DIFFERENCE OF PRE AND POST CONSUMPTION OF BEETROOT JUICE



Beetroot juice	Mean	t-value	P value
Pre-Post Consumption	PreVO_2 Max(ml/kg/min)	36.219±6.613	4.416 0.001*
	PostVO_2 Max(ml/kg/min)	40.219±6.031	

*Significance p >0.05

The mean ± standard deviation (SD) value of vo2max before consumption of beetroot juice was (36.219±6.613) and after consumption of beetroot juice vo2 max was increased. The value of VO2 max was (40.219±6.031).

CONCLUSION

The overall result was the mean ± standard deviation (SD) value of vo2max before consumption of beetroot juice was (36.219±6.613) and after consumption of beetroot juice vo2 max was increased the value of VO2 max was (40.219±6.031).

Therefore, the present study effect of beetroot which proved to be beneficial in various endurance sports to enhance the performance and it will increase the maximum volume of oxygen consumption. Whereas in medical conditions such as hypertension, cardiovascular disease, cancers etc. Also, this study will serve as a base for intervention studies to generate scientific knowledge and evidence which will help to conduct further research

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