International Journal of
Adapted Physical Education & Yoga
Online Journal : www.ijapey.info
Faculty of General & Adapted Physical Education and Yoga (GAPLY)
Ramakrishna Mission Vivekananda Educational and Research Institute (RKMVERI), Coimbatore Campus
(Deemed to be University as declared by Govt of India under Section 3 of UGC Act 1956)
SRKV Post, Pethyanaickenpalayam, Coimbatore,Tamil Nadu - 641020, India
ISSN : 2455-8958
Open Access Refereed e-Journal

Research article

ANALYSIS OF GENETIC FREQUENCY AMONG DIFFERENT TOPOGRAPHY UNIVERSITY ATHLETES

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Received 25th January 2019, Accepted 30th April 2019

Abstract

The adaptive demands inherent in environmental function have exerted defining influence on human genetic makeup. The present study aims to investigate the gene frequency of different topography Indian university athletes. To achieve the purpose of the study 160 male athletes from four regions of India such as South, North, East and West zones consist of 10 athletes in each category like sprinters, middle distance runners, jumpers and throwers from different topography namely plain, hills and coastal athletes selected at random. The Gene frequency such as "M" Alleles were selected as genetic variables and the selected variables are tested by using Hardy Wein – Berg Method. The unit of measurement of "M" Alleles was in percentage (%). The collected data on dependent variables statistically tested by using 4X4 factorial design to find the main and interaction effects. The Factor A denotes the category of the athletes such as sprinters, middle distance runners, jumpers and throwers and the factor B denotes the different topography such as South, North, East and West zone of Indian Universities. The scheffs post hoc test was used to find the paired mean difference, when the main and interaction effects found significant. The level of significance was fixed at 0.05. The results on "M" Alleles on factor A (Different Athletes) and factor B (Different Region) significant with middle distance runners and sprinters, jumpers, throwers. The study concluded that the "M" Alleles similar among different category athletes whereas the same was differ at topography.

Key Words: Athletes, Topography, "M" Alleles.

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INTRODUCTION

Athletic performance is a complex trait that influenced by both genetic and environmental factors. Many physical traits help determine an individual's athletic ability, primarily the strength of muscles used for movement and the predominant type of fibers that compose them **(De Moor, 2007).** An allele is a version of a gene, a heritable unit that controls a particular feature of an organism. *Allele frequency* refers to how frequently a particular allele appears in a population **(Montgomery, 1998).**

Genes carry the information, which determines what you are and how you function in the environment. As we learn more about how genes work in different organisms, we find that this knowledge and understating is applicable to each and every area of biological study **(Thompson, 2006).** The human genome is having profound effects on the understanding and treatment of disease: genetics helps to understand evolutions and speciation, and genetically engineered miomorganism that may be the industrial units of the future imprisoning, genetics underpins most programmes in animal and plant breeding agriculture even the production of the dreaded genetically manipulated plants **(Mills, 2001).**

Elite athletes are defined as the one who has competed at a national or international level in a given sport **(Gayagay, 1998).** The concept that genetic traits are strongly associated with human physical performance has been wildly accepted in the past decade. One of the main aims of such studies is to help clinicians and coaches to recognize and guide individuals with genetic potentiality to be elite athletes **(MacArthu, 2007).** Here, we specifically consider "M" Alleles genes which have been extensively studied for the association with athletic ability, However, the findings on the relations between genetic polymorphisms and sports performance are frequently heterogeneous analytical variables to find the difference among various topography athletes in India.

MATERIALS AND METHODS

To achieve the purpose of the study 160 male athletes from four regions of India such as South, North, East and West zones consist of 10 athletes in each category like sprinters, middle distance runners, jumpers and throwers from different topography namely plain, hills and coastal athletes selected at random. The Gene frequency of "M" Alleles were selected as genetic variables and the selected variables are tested by using Hardy Wein – Berg Method. The unit of measurement of "M" Alleles was in percentage (%). The collected data on dependent variables statistically tested by using 4X4 factorial design to find the main and interaction effects. The Factor A denotes the category of the athletes such as sprinters, middle distance runners, jumpers and throwers and the factor B denotes the different topography such as

South, North, East and West zone of Indian Universities. The scheffs post hoc test was used to find the paired mean difference, when the main and interaction effects found significant. The level of significance was fixed at 0.05.

RESULTS

TABLE - I

MEAN VALUES OF FACTOR A AND FACTOR B ON VO_{2MAX} AND BREATH HOLDING TIME

Gene Frequency of "M" Alleles (%)			
Factor A	**Mean**	**Factor B**	**Mean**
Sprinters	0.657	North	0.640
Jumpers	0.635	South	0.654
Throwers	0.645	East	0.643
Mid.Dis.Runners	0.641	West	0.638

TABLE - II

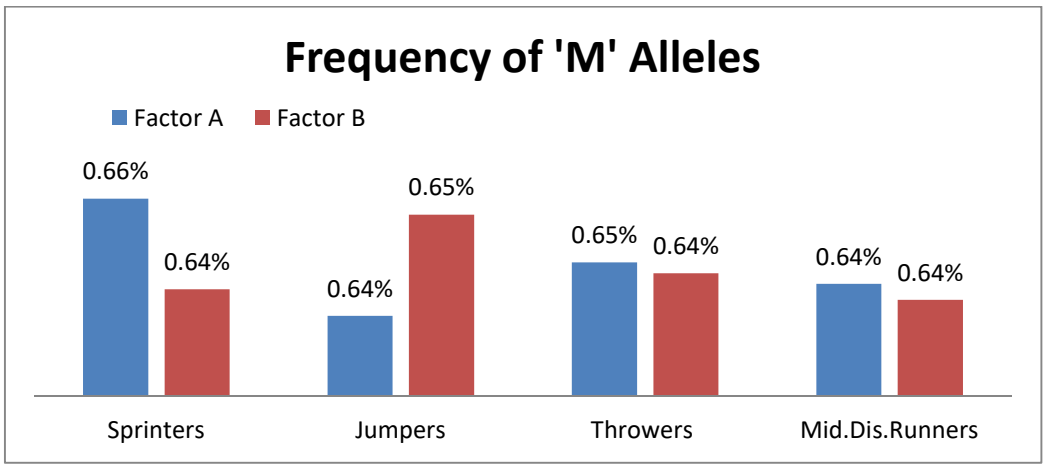
THE MAIN AND INTERACTION EFFECTS OF FACTOR A AND FACTOR B ON "M" ALLELES

Source of Variance	Sum of Squire	Degrees of Freedom	Mean Square	F. Ratio
Factor – A	0.0078	3	0.0026	**10.58***
Factor – B	0.0096	3	0.0032	**37.92***
AXB	0.0058	9	0.006	**4.19***
Error	0.0456	144		
Total	0.0688	159		

***Significance at 0.05.**

The results on genetic variable among different topography athletes shows that the frequency of "M" alleles have significant difference among sprinters, middle distance runners, jumpers and throwers whereas there was a significant difference found among different topography too. The paired mean differences and the simple effect interpretation on "M" alleles show that the throws and middle distance runners have no significant difference. In view of topography the east zone and west zone paired mean have significant difference on "M" alleles.

FIGURE - 1
THE BAR DIAGRAM OF MEAN VALUES OF "M' ALLELES OF FACTOR A AND FACTOR B



DISCUSSION

The results on frequency of "M" alleles in line with precious finding of verious genetic investigations discus and presented below in logical manner. A mutant alleles may confer residual pancreatic exocrine function who are pancreatic sufficient. The ability to detect mutations in the cystic fibrosis gene at the DNA level has important implications for genetic diagnosis **(Kerem, 1989). (Alvarez, 2000).** Investigate the D allele at the angiotensin-I-converting enzyme among elite athletes, and 400 healthy controls, The I-allele occurred at a significantly higher frequency in athletes compared to controls. Gene and genotype frequencies for the Ang and AT1 polymorphisms did not differ between athletes and controls. Since the frequency of the ACE I allele was significantly increased among elite athletes. The present results on "M" alleles differ on above limitations.

Costa et al. 2009 first found a significant excess of the I allele and the II genotype in Australian national rowers attending their pre-Olympics selection trial. Generally, the I allele seems associated with endurance-orientated events, while the D allele seems like to be the opposite with power-orientated events. **Cieszczyk et al. 2009** reported that a significantly different I allele frequency between rowers and controls in Poland population, which indicated positive association of the I allele with endurance performance. Examination of the gene frequency within a single sporting discipline with a spectrum from power-orientated short, to more endurance-based longer distances is a preferred strategy **(Tobina, 2010).**

The above results on different genetic finding on athletes differs from present study. *The analysis of* "M" alleles among different terrain Indian athletes is the best predictor of talents and supports to sports scientists for better performance of our athletes in would level. The present study also have similarity and contrast on the selected genetic variable among

athletes in the different topography of Indian University Athletes.

CONCLUSION

Based on the results of the study concluded that the sprinters have greater *"M" alleles* when compare with Middle distance runners, Jumpers and Throwers. There was significant difference among the different topography athletes on *"M" alleles*. The west zone athletes have greater "M" alleles when compare with rest of the zones in India.

RECOMMENDATION

From the study outcome it will recommended that the genetic frequency among athletes in the different topography of India have greater contact and require more concentration to get better performance to achieve higher.

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Site this article:

Gopinath, V., & Vijay, S. (2019). Analysis of genetic frequency among different topography university athletes. *International Journal of Adapted Physical Education & Yoga*, Vol. 4, No. 5, pp. 42 to 48.