

Foot Length of the all India intervarsity, national and state level long distance runner comparative study



Physical Education

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ABSTRACT

The main purpose of the present study was to investigate anthropometrical variations among the all India intervarsity, national and state level long distance runners. The study consisted of 227 All India Intersarsity, 131 National and 42 State Long Distance Runners from different levels of competition. The age group ranged from 18 to 25 years. Measurements included the foot length of all athletes. For measuring the foot length. The measuring tape were used. It was found that there is a significant difference between the mean foot length of all India intervarsity and national level long distance runners. Whereas there is no difference exists between all India intervarsity and state level long distance runners and also between national and state level long distance runners.

Introduction

At present, track and field consist of running, hurdling, jumping and throwing events held between individuals and teams at indoor and outdoor meets. The running and hurdling competitions make up the track events, while the jumping and throwing contests comprise the field events. In many countries the sports as a whole is called athletics. Running races are the most prominent track events; that ranges in length from the indoor 50 meter dash to the outdoor marathon.

The foot length is a very important factor for performance in sports. The tactical efficiency in long duration sports depends largely up on the foot length of the sport man. The event of long distance running demands constant movement over a long period of time. One must first attain muscular and cardio respiratory endurance. Because the players move quickly up and down in a limited space, one needs to concentrate on developing good control of body movements.

Measurement plays an important role to reaching the peak level of performance to long distance runners. The measure anthropometrical traits are as, long foot, lighter in weight and lower the center of gravity provides the maximum level of perfection in the running events. Measurement of body Size includes such descriptive information as height, weight and surface area. While measures of body proportions describe the relationship between the height and weight among lengths, widths and circumference of various body segments.

Defined by Jalliffe (1966) as measurement of the variation of physical dimension and grass composition of the human body at different age levels and degrees of nutrition.

Bemies (1900) The runners and jumper were found to be 2 inches above average in height and with the arm reach an inch longer, with longer legs and also with the lower leg an inch longer than other persons of the same height, the calf and thigh averaged smaller and the hip an inch narrower. He suggested that these leg proportions gave a quick acting upper leg and a long reach with the lower.

Eiben (1981) studied the importance female athletes, size, and shape and body composition and reported that female sprinters were smaller in stature than female hurdlers, jumpers and throwers.

Chauhan, M.S. (1986) studied relationship between selected anthropometric variable and endurance running performance. He concluded that height, leg length, thigh length, total arm length, shoulder, chest, abdomen, hip and knee girths, thigh and calf skin folds and lean body mass had significant and negative correlation with 1500 m endurance running performance, where as 10,000 m running performance had statistically insignificant correlation

with linear segment, girth and diameter measurements except with skin fold measurement (triceps, suprailiac, midaxillary, thigh and calf skin-fold) and body composition variables (i.e. body density, fat percentage, fat weight and lean body mass). Multiple correlations of 1500 meters running performance with combination of selected anthropometric variable were significant. Similarly the multiple correlation of 10,000meters running performance with combination of selected skin fold and body composition variables were significant. But the multiple correlations were not sufficient size to put them in to the prediction equation.

Thus physical characteristics play a very vital role in all games and sports whether it is team or individual game, ideal body segments as per the demand of the particular event is necessary for higher achievement in that particular sport.

Methodology

For the purpose of this study three sample groups were formed. 1st group comprises of 227 All India Intersarsity Long Distance Runners, 2nd group comprises of 131 National Long Distance Runners and 3rd group comprises of 42 State Long Distance Runners were selected from different level of competition. They are in the age group of 18 to 25 years.

TOOLS

It is the straight distance between the most posterior point of the heel (acropodian) and the tip of the longest toe (pterion). The subject was asked to stand in an erect position with feet slightly apart and equal weight on both the feet. The measuring tape was used to measure this distance. The reading was recorded up to one-tenth of a centimeter.

One way analysis of variance was used to test whether there is any significant difference among the chosen foot length variable of long distance runners at different level of competition.

ANALYSIS OF DATA AND DISCUSSION

A statistical analysis was carried out and the result obtained is given below.

Table: 1

Foot Length of the all India intervarsity, national and state level long distance runner

Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F-Value
Treatment	2	26.34	13.17	5.61*
Error	397	931.97	2.34	
Total	399	958.31		

*Significant at .05 level

Tab.F.05 (2,397) =3.02

It is evident from the observed values in table-1 that there is a significant difference in the mean foot length of different level long distance runners because the calculated value of F (5.61) is more than the tabulated value of F (3.02). Further to find out which level is greater than the other researcher applied Scheffe's test, the analysis pertaining to this is presented in table-2.

Table-2
Comparison of Foot Length of the all India intervarsity, national and state level long distance runner

Level			Mean Difference	CD at 5% Level
All India Intersarsity	National	State		
25.02	25.57		.55*	.41
25.02		25.36	.34	.62
	25.57	25.36	.21	.66

*Significant at .05 level

In comparing the pair wise mean difference with the critical difference (table-2), it is evident that there is a significant difference between the mean foot lengths of all India intersarsity and national level. Whereas there is no significant difference between national and state level and also between all India intersarsity and state level long distance runners.

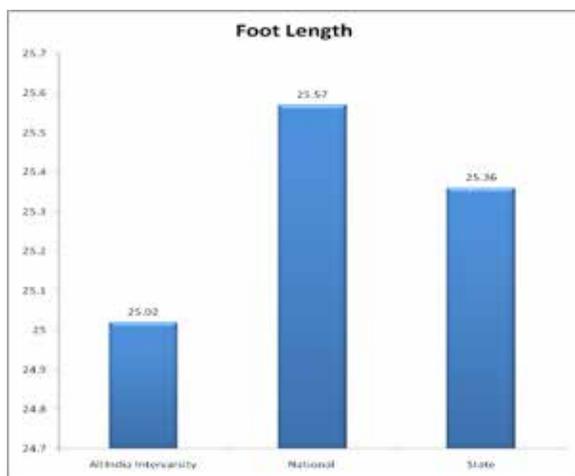


Fig.1
Mean Foot Length (cm) of Different Level Long Distance Runners

DISCUSSION

It is evident from the observed values in table-1 that there is a significant difference in the mean foot length of different level long distance runners because the calculated value of F (5.61) is more than the tabulated value of F (3.02). The find out which level is greater than the other. C.D. that there is significant difference amongst the mean foot length of all India intersarsity and national level. Where as there is no significant difference between national and state level and also between all India intersarsity and state level long distance runners. There is length very important role in foot length. For foot is similar of all India intersarsity and state level and all India intersarsity and national level long distance runners.

Eliben's (1972) He observed that in each anthropological character of the sprinters had long lower extremities especially their thigh. Amar (1920) He pointed out that short heavyset people are remarkable strong and good weight lifter. The "grasshopper" type with relatively long legs (particularly fore legs) marks good jumper, runners and vaulters.

Tom Ecker (1985) stated that human running permit the body to float in the air between strides, with both feet off the ground approximately half the time. Thus the runners' strides can be considerably longer than the length of the legs. In theory, an increase in either stride length or stride frequency will increase a runner's speed. However, each of these factors has such an effect on the other that there are times when increasing one reduces the other enough to produce a slower speed. There is the direct relationship between leg length and both stride length and stride frequency. A sprinter with short legs has naturally shorter strides, which brings the foot back to the ground sooner if the stride was longer. Generally, shorter the leg, shorter the stride and slower the frequency.

Dyson, H.G. (1986) stated that the running speed is the product of length and frequency of stride, their ratio changing from one phase of a race to another and from athlete to athlete yet these.

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