



COMPARATIVE STUDY OF LOWER LEG LENGTH OF LONG DISTANCE RUNNERS AT DIFFERENT LEVEL OF COMPETITION

KEYWORDS

lower leg length, Long Distance runners, Cardio respiratory endurance

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ABSTRACT

The 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 lower leg length of all athletes. For measuring the lower leg length. The measuring tape were used. It was found that there is a significant difference between the mean lower leg length of national and state level long distance runners. Where as there is a no difference exists between all India intersarsity and national level long distance runners and also between all India intersarsity and state level long distance runners.

Introduction

In ancient time the human was engaged with running activities for gathering food, safety measures and so many daily needs. With the starting of modern Olympic games since 1896 the running was introduced as event. Which one must cover definite distance in minimum possible time after that the running activity was categorized with sprints (short distance, medium distance and long distance running).

Measurement plays an important role to reaching the peak level of performance to long distance runners. The measure anthropometrical traits are as, tall height, 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 gross 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 perfor-

mance 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 10,000 meters 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.

Collection of Data: The subject was made to stand erect with weight equally distributed on both legs. Tibia of the right leg was marked. The distance between tibia lateral and sphyryon tibiale was measured with the help of measuring tape.

Statistical Technique: One way analysis of variance was used to test whether there is any significant difference among the chosen lower leg 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
Lower leg length

All India Intersvarsity, National and State Level

Source of Variation	DF	Sum of Squares	Mean Square	F-Value
Treatment	2	59.06	29.53	3.40*
Error	397	3440.22	8.66	
Total	399	3499.28		

*Significant at .05 level

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

Above table shows that there significant difference in the mean lower leg length of three levels. Further to find out which level is greater than the other we had applied scheffe's test, the analysis pertaining to this is given in table.

Table-2

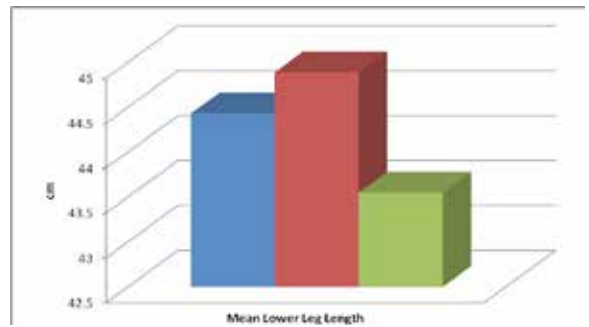
Comparisons of long distance runners mean lower leg length of different level

Level			Mean Difference	CD at 5% Level
All India Intersvarsity	National	State		
44.43	44.89		.46	.79
44.43		43.55	.88	1.20
	44.89	43.55	1.34*	1.27

*Significant at .05 level

Comparing the pair wise mean difference with the critical difference, it is evident that there is a significant difference between the mean lower leg lengths of national and state level. Where as there is a no difference between all India intersvarsity and national level and also between all India intersvarsity and state level.

Figure: Mean Lower Leg length of different level runners



DISCUSSION

From the table-1 it is evident that there is significant difference amongst all the three groups on the variable of lower leg length of long distance runners. Observed f-value i.e.,3.40* is greater as compared to table value i.e., 3.02. The find out which level is greater than the other. C.D. that there is significant difference amongst the mean lower leg length of national and state level long distance runners. Where as there is a no difference between all india intersvarsity and state level and also between all India intersvarsity and national level long distance runners. There is height very important role in leg length. For height is similar of all India intersvarsity and state level and all India intersvarsity 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 heavysset 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.

REFERENCE

Amar, J. (1920). The Human motor, New York, E.P.Dutton. pp 47 | Campos, F. A. D., Daros, L. B., Mastrascusa, V., Dourado, A. C. and Stanganelli, L. C. R. (2009). Anthropometric profile and motor performance of junio badminton players Brazilian Journal of Biomotricity, v. 3, n. 2, p. 146-151, (ISSN 1981-6324). | Chauhan, M.S. (1986). The relation ship between selected anthropometric variables and endurance running performance unpublished Ph.D.theses, Kurukshetra University, | Chauhan, M.S. (2003). Prediction of performance of university throwers in relation to their anthropometric measurements. Journal of sports and sports sciences, NIS, Patiala Vol.27 (23); 25-3. | Eliben, O.G. (1972). The Physique of Women Athletes. The Hungarian Scientific Council for Physical Education, Budapest. | Tanner, J.M. (1964) the physique of the Olympic Athletes. London: Allen and Unwin. | Tom Ecker (1985). Basic track and field biomechanics" Taf News Press Lot Altos, California, USA.