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## **Comparison of Selected Physical Fitness and Physiological Parameters of Footballers belonging to North-East and Other States**

Ningombam Amitrasen Singh

Degree College of Physical Education ,H. V. P. M. Amravati 444605, India

### **Abstract**

The purpose of the study was to compare the selected physical fitness components and physiological parameters of football players belonged to North east and other states of India. For this purpose 50 (fifty) football players from North East and 50 (fifty) from other states who represented Inter-collegiate football tournament of S. G. B. Amravati University, Amravati were selected as the subjects for the present study. The age of the selected subject was ranged from 18 to 25 years. The data were collected on the selected subjects by administering 50 mtr. Dash for speed, 4 x 10 mtr. Shuttle run for agility, standing board jump for explosive leg strength, 12 min. run and walk test for cardiovascular endurance, bend knee sit up for muscular endurance, dry spirometer for vital capacity, pulse count for 1 min. with stethoscope for heart rate, up and down movement of the abdomen in 1 min. for respiratory rate. To determine the significant difference if any between the selected groups independent t test was computed separately for each variable. The result showed the significant difference in agility, explosive leg strength, respiratory rate and vital capacity. The finding also reveals that the football players belonged to North east state were significantly superior to the other states' football players.

**Key words:** physical fitness components, physiological parameters football players.

### **Introduction**

Scientists and physiologists have been of the view that physiological parameters of an athlete have a lot to do with their performance more than the techniques and tactics of the player. Most of the games demand a greater amount of speed, strength, endurance, agility, and flexibility etc. Fitness from the stand point of the football players means that the player must have a high standard of physical and physiological condition, which makes possible through the perfect functioning of the organs of locomotion and circulation and of nervous system, the maximum possible use and application of his physical and mental capabilities and knowledge of football. The existing literature in the field of soccer shows that endurance, speed, agility, maximum leg strength, upper body strength, leg power, muscular endurance, flexibility, coordination and reaction time are important pre-requisite for efficient soccer performance, and whereas excess body fat proves to be a hindrance. The game of soccer requires tremendous physical fitness as the duration of the game is longer in time in which basic management such as different skills are involved. The researcher therefore, has made an attempt to compare the selective physical fitness and physiological parameters of the soccer game.

### **Methodology**

#### **Selection of the subject**

The researcher selected the male footballers by adopting simple random sampling method those who were participated in the inter-collegiate tournament of Sant Gadage Baba Amravati University from Degree college of Physical education and other colleges. The player's age was ranging from 18- 25 years. The total numbers of subjects were 100, fifty subjects from North East and Other states of India.

#### **Selection of test and Criterion measures**

To measure the speed of the subject 50-meter dash test was administered and score was recorded in seconds.

To measure the agility of the subject shuttle run was administered and score was noted down in seconds.

Explosive leg strength of the subject was measured by applying standing broad jump and score was recorded in centimeter.

To measure the cardiovascular endurance of the subject cooper 12 minute run and walk was administered and score was recorded in meters.

Muscular endurance of the subjects was measured by using bent knee sit up was administered and score was given in total number of sit up in 60 seconds.

Dry Spiro meter was used to measure the Vital capacity of the subjects and the score was recorded in ml.

Heart rate was measured by pulse count in one minute and the score was recorded in number.

The Respiratory rate of the subjects was counted simply by observation of the up and down movement of the abdomen in one minute and score was noted in number.

## Results

The findings of table 1 reveals that there are significant differences between the means of North-east and other states' football players in agility ( $t = 12.59$ ), explosive leg strength ( $t = 8.79$ ), respiratory rate ( $t = 3.39$ ) and vital capacity ( $t = 4.41$ ) as all the above mentioned calculated  $t$  – values are greater than the tabulated  $t$  – value of 1.987 at 0.05 level of confidence for the 98 degrees of freedom (Fig 1). The table also shows that there are no significant differences between the means of aforesaid two groups of football players in speed ( $t = 1.45$ ), cardiovascular endurance ( $t = 0.14$ ), muscular endurance ( $t = 1.13$ ) and heart rate ( $t = 0.79$ ) because all these obtained  $t$  – values are less than the tabulated  $t$  - value of 1.987 needed to be significant at 0.05 level of confidence.

## Discussion

According to the findings significant differences were found in Agility, Explosive Leg Strength, Respiratory rate and vital capacity in between two different areas of footballers belonged to North-East and Other States of India. Players of North-East states are shorter in stature therefore their center of gravity is quite lower than the players of other states of India moreover they build good musculature body due to their nature of food habits and life style, hence might have supported to develop agility. Most of the players belonging to North-East states reside in the hilly areas therefore to go from one place to another they need to climb up-down the number of steps which might have led to develop the strength of the muscles of lower extremities resulting enhancement of explosive leg strength.

The reasons for the significant difference may be attributed to the fact that the players belong to North-East states generally reside in such geographical condition which are mostly free from pollution and hazards, as well as the presence of less amount of oxygen that lead to keep the respiratory tract and alveoli of lungs efficient for the better respiratory functions. Hence the findings of the study might have shown the significant better respiratory and vital capacity among the football players of North-East states while compared to Other states of India.

## Conclusion

Recognizing the limitations and on the basis of statistical results of the study the following conclusions are drawn:

Significant mean differences were found in the physical fitness components of agility and explosive leg strength in between the football players of North-East and Other states. The football players belonged to North-East states were significantly superior in agility and explosive leg strength compared to other states' footballers. Football players from North-East states were significantly superior in respiratory rate and vital capacity than the football players of other states.

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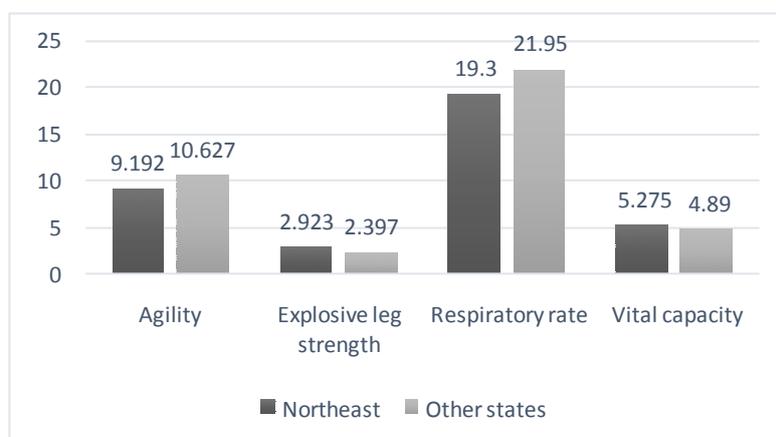
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**Table no. – 1: Description of Mean, Standard Deviation and t-ratio for the data on Selected Physical Fitness and Physiological Parameters of Footballers Belonging to North-East and Other States**

variables	Groups	Mean	S D	M D	S E	t - ratio
Speed	North east	6.72	0.389	0.152	0.105	1.45 <sup>@</sup>
	Other states	6.87	0.633			
Agility	North east	9.192	0.510	1.435	0.114	12.59*
	Other states	10.627	0.621			
Explosive leg strength	North east	292.32	30.42	52.61	5.98	8.79*
	Other states	239.71	29.36			
Cardiovascular endurance	North east	2600.10	102.79	4.10	29	0.14 <sup>@</sup>
	Other states	2596.00	177.47			
Muscular endurance	North east	41.7	6.814	1.50	1.33	1.13 <sup>@</sup>
	Other states	40.2	6.509			
Respiratory Rate	North east	19.3	3.700	2.65	0.78	3.39*
	Other states	21.95	4.122			
Vital Capacity	North east	5275	513.88	435.00	98.65	4.41*
	Other states	4890	471.72			
Heart rate	North east	67.8	9.423	1.5	1.88	0.79 <sup>@</sup>
	Other states	69.3	9.347			

\*Significant at 0.05 level

Tabulated  $t_{0.05(98)} = 1.987$



**Figure 1: Agility , Explosive leg strength , respiratory rate and vital capacity of Northeast Vs Other states**