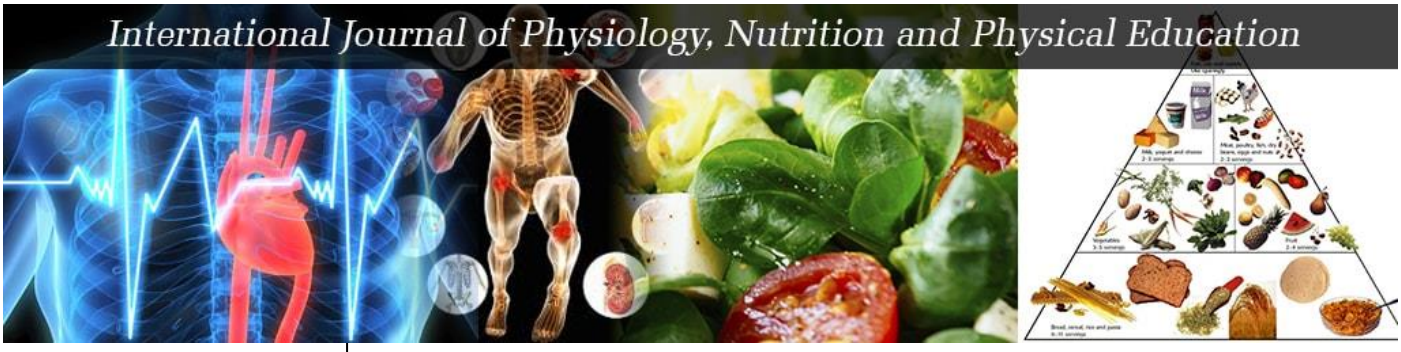


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# Physical performance and nutritional status among high school girls

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**Abstract**
The purpose of the present study was to analyze the selected physical performance and nutritional status of tribal, non-tribal and coastal area high school students in Kerala. To achieve the purpose of the study, a total of 750 students were selected from the government and aided schools in Kerala. The age of the subjects ranged from 14 to 15 years. The selected girls were divided in to three groups as per the tribal, non-tribal and coastal area students. Each group consisted of 250 subjects.
The physical performances variables for the study were agility and jump for distance. The nutritional status was found out by using the formula body mass divided by the squares of their height. One-way analysis of variance (ANOVA) was used for each variable separately to find out the significant difference among tribal, non-tribal and coastal area students. The level of significance was fixed at 0.01 levels. Wherever F ratio was found to be significant, post-hoc comparison (Duncan's test) was used to find out which pair of the groups shown more significant difference.

**Keywords:** Physical performance, nutritional status, agility, jump for distance

## Introduction
For physical fitness and healthy life style, sports are vital. Both the body and mind achieve benefit from sports. People can improve their health and well-being by involving in sports. By dedicating a small part of each day to physical activity or sports, people can improve their health and well-being. Bacon's saying 'sound mind is in the sound body' is true and highly believable that a sound mind lives in a sound body. Any form of physical activity is no other than sports. For, that is performed for pleasure and the love of efforts. The wish to be able to defend oneself and to keep fit, can also is a reason for practicing sport.
Sarkar Sampaand Dr. Paul Asish (2015) [3] compared health related physical fitness between tribal and non-tribal school going boys. For the study, thirty subjects on each group of tribal and non-tribal in the age group of 12–14 years from a secondary school were chosen randomly for the present study. The criteria's were cardio respiratory endurance, abdominal strength endurance, upper body strength endurance, flexibility, and body composition which were measured by 1 mile run & walk, curl-ups, push-ups, V-sit & reach and body mass index. It is concluded from the study that the non-tribal students have more flexibility, abdominal strength endurance and higher BMI than the tribal students and non-tribal students have less cardio respiratory endurance and upper body strength endurance.

## Purpose of the study
The purpose of the study was to find out physical performances and nutritional status of tribal, non-tribal and coastal area high school girls.

## Hypotheses
1. There may be a significant difference among tribal non-tribal and coastal area high school girls' physical performance.
2. There may be a significant difference among tribal non-tribal and coastal area high school girls' nutritional status.

**Selection of subjects**
To achieve the purpose of the study, a total of 750 students were selected from the government and aided schools in Kerala.

**Selection of variables and criterion measures**
The following variables are selected for the purpose of the study

**Gross motor skill performance**
1. Agility : Shuttle Run (In Seconds)
2. Jump for Distance : Standing Broad Jump (In Meters)

**Nutritional Status**
1. Height : Stadiometer
2. Weight : Weighing Machine

**Criterion measures**
The criterion measures for the selected variables used are
1. Jump for distance was used to test the horizontal jumping ability and the score were recorded by using measuring tape in meters and centimeters.
2. The 4x10 meters shuttle run was used to test the agility and the scores were recorded with stop watch in one tenth of seconds.
3. Body Mass Index was calculated by using the formula Weight in Kg/ Height in M²

**Analysis of Data and Results of the study**
In the present study, One Way Analysis of Variance (ANOVA) was used to find out whether there is any significant difference among tribal non-tribal and coastal area high school students physical performance and nutritional status. The 'F' ratio was used to find out whether there is any significant variation on throw for distance, run for distance and nutritional status. The level of significance was fixed at 0.01level. Wherever F ratio was found to be significant, post-hoc comparison (Duncan's test) was used to find out which pair of the groups shows more significant difference.

**Mean scores of tribal, non-tribal and coastal area high school girls in relation to the variable; Agility.**
In order to test whether there exist any significant difference in the tribal, non-tribal and coastal area high school girls' gross motor skill performance variable; Agility, the data obtained were analyzed and compared by using one-way ANOVA and the obtained 'F' ratio was tested for significance. The details of analysis are presented in Table 1.

**Table 1:** Analysis of variance for the comparison of agility among tribal, non-tribal and coastal area Girls

| Variable | Source of variation | Sum of Squares | df | Mean Square | F |
|---|---|---|---|---|---|
| Agility | Between Groups | 26.97 | 2 | 13.48 | 33.72* |
| | Within Groups | 298.79 | 747 | 0.39 | |
| | Total | 325.77 | 749 | 13.89 | |

*Significant at 0.01 level.
Table value of F
F (2, 747) at 0.01 level = 4.63

As per the Table 1 the result obtained from ANOVA shows that there is significant difference among the tribal, non-tribal and coastal area high school girls on the variable: Agility, the F- value is 33.72 which is greater than 4.63 at 0.01 levels. Hence the Hypothesis formulated in the present study; there may be a significant difference among the tribal, non-tribal and coastal area high school girls physical performance variable: Agility is accepted.
To find out which pair of the groups shows more significant difference the Investigator used 'Post hoc comparisons (Duncan's Test) and the results are shown in Table 2.

**Table 2:** Mean scores of Duncan's Multiple Range test for tribal, non-tribal and coastal area high school girls' Agility

| Variables | Number | Subset for Alpha = 0.05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Coastal | 250 | 12.57 | | |
| Non-Tribal | 250 | | 12.87 | |
| Tribal | 250 | | | 13.05 |

From the Table 2 it is clear that there is significant difference among tribal, non-tribal and coastal area high school girls' physical performance variable: agility. The Duncan's Test reveals that the tribal area high school girl's (13.02) have higher mean score than the girls belong to non-tribal and coastal areas. This is illustrated in Figure 1.

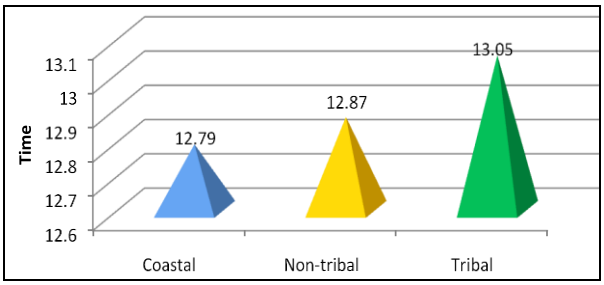


**Fig 1:** Mean scores of tribal, non-tribal and coastal area high school girls' physical performance variable; Agility (on time).

**Mean scores of tribal, non-tribal and coastal area high school girls in relation to the variable; Jump for distance.**
In order to test whether there exist any significant difference in the tribal, non-tribal and coastal area high school girls' physical performance variable: Jump for distance, the data obtained were analyzed and compared by using one-way ANOVA and the obtained 'F' ratio was tested for significance. The details of analysis are presented in Table 3.

**Table 3:** Analysis of variance for the comparison of jump for distance among tribal, non-tribal and coastal area Girls

| Variable | Source of variation | Sum of Squares | df | Mean Square | F |
|---|---|---|---|---|---|
| Jump for distance | Between Groups | 2.03 | 2 | 1.01 | 30.24* |
| | Within Groups | 25.05 | 747 | 0.03 | |
| | Total | 27.08 | 749 | 1.05 | |

*Significant at 0.01 level.
Table value of F
F (2, 747) at 0.01 level = 4.63

As per the Table 3 the result obtained from ANOVA shows that there is significant difference among the tribal, non-tribal and coastal area high school girls on the variable: Jump for distance, the F- value is 30.24 which is greater than 4.63 at 0.01 levels. Hence the Hypothesis formulated in the present study; there may be a significant difference among the tribal, non-tribal and coastal area high school girls on physical performance variable: Jump for distance is accepted.
To find out which pair of the groups shows more significant difference the investigator used the 'Post hoc comparisons (Duncan's Test) and the results are shown in Table 4.

**Table 4:** Mean scores of Duncan's Multiple Range test for tribal, non-tribal and coastal area high school girls' Jump for distance

| Variables | Number | Subset for Alpha = 0.05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Non-Tribal | 250 | 1.35 | | |
| Coastal | 250 | | 1.49 | |
| Tribal | 250 | | | 1.58 |

From the Table 4 it is clear that there is significant difference among tribal, non-tribal and coastal area high school girls' physical performance variable: Jump for distance. The Duncan's Test reveals that the Tribal area high school girls (1.58) have higher mean scores than the girls belong to tribal and coastal areas. This is illustrated in Figure 2.

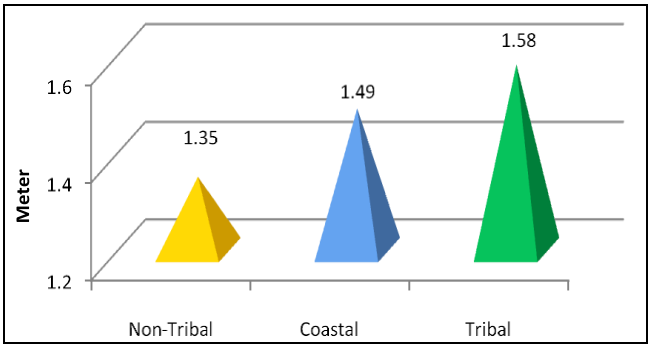


**Fig 2:** Mean scores of tribal, non-tribal and coastal area high school girls' physical Performance variable; Jump for distance (in meters).

**Mean scores of tribal, non-tribal and coastal area high school girls in relation to the variable; Nutritional status**

In order to test whether there exist any significant difference in the tribal, non-tribal and coastal area high school girls' nutritional status, the data obtained were analyzed and compared by using one-way ANOVA and the obtained 'F' ratio was tested for significance. The details of analysis are presented in Table 5.

**Table 5:** Analysis of variance for the comparison of nutritional status among tribal, non-tribal and coastal area Girls

| Variable | Source of variation | Sum of Squares | df | Mean Square | F |
|---|---|---|---|---|---|
| Nutritional Status | Between Groups | 245.55 | 2 | 122.77 | 41.57* |
| | Within Groups | 2206.03 | 747 | 2.95 | |
| | Total | 2451.58 | 749 | 125.73 | |

*Significant at 0.01 level.
Table value of F
F (2, 747) at 0.01 level = 4.63

As per the Table 5 the result obtained from ANOVA shows that there is significant difference among the tribal, non-tribal and coastal area high school girls on the variable: Nutritional status, the F- value is 41.57 which is greater than 4.63 at 0.01 levels. Hence the hypothesis formulated in the present study; there may be a significant difference among the tribal, non-tribal and coastal area high school girls on nutritional status is accepted.

To find out which pair of the groups shows more significant difference the investigator used 'Post hoc comparisons (Duncan's Test) and the results are shown in Table 6.

**Table 6:** Mean scores of Duncan's Multiple Range test for tribal, non-tribal and coastal area high school girls' nutritional status

| Variables | Number | Subset for Alpha = 0.05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Tribal | 250 | 12.63 | | |
| Coastal | 250 | | 13.34 | |
| Non-Tribal | 250 | | | 14.03 |

From the Table 6 it is clear that there is significant difference among tribal, non-tribal and coastal area high school girls' nutritional status level. The Duncan's Test reveals that the non-tribal area high school girls (14.03) have higher mean score than the girls belong to coastal and tribal areas. This is illustrated in Figure 3.

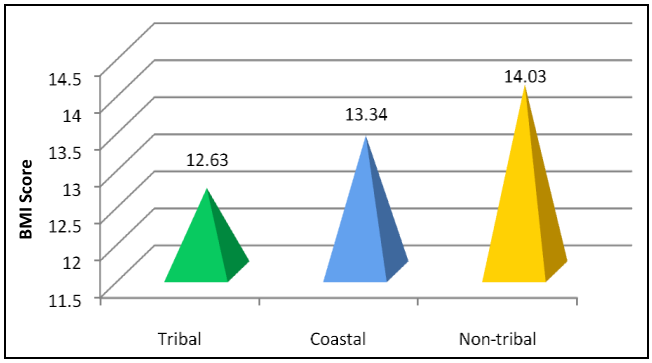


**Fig 3:** Mean scores of tribal, non-tribal and coastal area high school girls' Nutritional status (on score).

## Findings

1. It has been found that there is a significant difference in agility of tribal, non-tribal and coastal area high school boys in Kerala. Coastal area girls are reported to have lower mean agility score than non-tribal and tribal area. Tribal area students are reported to have higher level of mean agility score than non-tribal and coastal area student. The lesser timing means better performance, so lower the means score, better the agility.
2. It has been found that there is a significant difference in jump for distance of tribal, non-tribal and coastal area high school girls in Kerala. Tribal area girls are reported to have high mean jump for distance score than coastal and non-tribal area. Non-tribal area students are reported to have lower level of mean jump for distance score than coastal and tribal area students.
3. It has been found that there is a significant difference in nutritional status of tribal, non-tribal and coastal area high school girls in Kerala. Non-tribal area girls are reported to have higher level of mean nutritional status score than coastal and tribal area. Tribal area students are reported to have low level of mean nutritional status score than coastal and tribal area students.

## Conclusion

1. In conclusion, the result of the study reveals that tribal area high school girls have better physical performance in jump for distance when compared with the students from the non-tribal and coastal area high school girls.
2. The study also found that high school girls from the coastal area exhibited higher performance in agility than

the other category girls. Tribal area students exhibited lesser performance in agility.

3. It was concluded from the result of the study that non-tribal area high school girls have higher nutritional status score than coastal area and tribal area girls. Whereas tribal area girls have lesser score.
4. The nutritional status score reveals that all three groups have lesser scores than required.

**Suggestions and recommendation**

1. The outcome of the study can be used as a tool to identify the talent of the young students in each region. It may be implied to assess the human performance for selection, classification and diagnosis of sports talents in different regions of Kerala.
2. The result of the present study may help diagnose and classify the physical capabilities of the students in each a region. Since the participant students of the different regions are found under nutritional status, they are badly in need of nutritional food that must provide by the physical education department.

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