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# FACTORS INFLUENCING ATHLETIC PERFORMANCE AMONG UG STUDENTS OF UAS, RAICHUR

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**ABSTRACT:**

The present study was conducted at the Department of Physical Education, UAS, Raichur, Karnataka with an objective to study the factors influencing athletic performance among UG students. The sample consisted of 126 Undergraduate students of I B.Sc. Agri. and I B.Tech. admitted during 2013-14 (75 men and 51 women students). Assessment of performance of students in Athletics i.e., 100 and 200 m, sprints, 800 m, 1500 m run for endurance, Long jump and Shot-Put was measured using suitable methods. Anthropometric measurements i.e., Height, Weight, Arm, chest, hip and waist Circumference were recorded with the fiberglass tape using appropriate methods. The data on food consumption pattern was elicited using 24 hours recall method and food frequency questionnaire. The results from correlation analysis revealed that, there was a positive and significant correlation between performance in athletics and nutrition. About 96 per cent of the students were residing in the hostels; hence to assess the food consumption pattern, the hostel menu was used for calculating nutrient intake of students. The athletic performance for men in 100 m sprint ranged from 13-18.09 sec., in 200 m 26-31 sec, in 1500 m 5.25 -8.22 min,. The distance covered in shot put was 3.35-8.00 m and for long jump 2.50 -5.00 m. Similarly among women, the time taken for 100m sprint ranged from 18-25.60 sec; in 200 m 30-42 sec; in 800 m 3.5-7.90 min. The distance covered in long jump was 2.30-4.45 m, and in shot put 2.83-6.34 m. The results imply that, the nutrition has an impact on Athletes' performance. The details of analysis are discussed and presented in the paper.

**KEYWORDS:** Athletic performance, Dietary pattern, Anthropometric measurements.

## INTRODUCTION

The nutritional intake of athletes is a critical determinant of their athletic performance and ability to compete both physically and mentally. Body composition and weight are two factors at contribute to optimal exercise performance. Body weight can influence athlete's speed, endurance (Stamina) and strength (power) whereas body composition can affect athlete's strength, agility

(coordinating ability) and appearance. Too little body fat results in deterioration of health and performance. Endurance athletes tend to have lower percentages of body fat than non-endurance athletes because body fat limits endurance, speed and movement ( Srilaxmi, 2012). Taking cognizance of these factors, a study was conducted at the Department of Physical Education, UAS, Raichur, Karnataka with an objective to assess the factors influencing athletic performance among UG students. It is mandatory for the students undergoing B.Sc. Agri. or B. Tech. to complete two courses in Physical education though it is a compulsory non credit course. The tournaments are conducted regularly for various activities. Hence, students need to master the skills in athletics.

## MATERIAL AND METHODS

The sample consisted of 126 Undergraduate men and women students of I B.Sc. Agri. and I B.Tech. admitted during 2013-14 at University of Agricultural Sciences, Raichur campus. Assessment of performance of students in Athletics i.e., 100 and 200 m sprints, 800 m 1500 m run for endurance, Long jump and Shot-Put was measured using suitable methods. Anthropometric measurements i.e., Height, Weight, Arm, chest, hip and waist Circumference were recorded with the fiberglass tape using appropriate methods. The data on food consumption pattern was elicited using 24 hours recall method and food frequency questionnaire. Descriptive statistics and Correlation coefficients were used to analyze the results.

## RESULTS AND DISCUSSION

The results presented in table 1 reveal that, the average height of the men students was 169, which is about 2.5 cm more than that of women students, similarly the weight of men students was 59.92, which is again 12 kg more than that of women students. Men students fared better in 100 m sprints, 200 m sprints, endurance run i.e, (1500 M run) Long Jump and Shot put. Women students had similar MUAC when compared to men students, but the mean Chest Circumference, Head Circumference and Waist Circumference was higher among women students as compared to men. It was seen that, the men students with the lean body mass performed better in all the athletic events, though there are different standards for men as well as women. Body weight can influence athlete's speed, endurance (Stamina) and strength (power) whereas body composition can affect athlete's strength, agility (coordinating ability) and appearance. Too little body fat results in deterioration of health and performance. Endurance athletes tend to have lower percentages of body fat than non-endurance athletes because body fat limits endurance, speed and movement ( Srilaxmi, 2012)

**Table 1. Average performances and anthropometric measurements of respondents**

| | Women students | | Men students | |
|---|---|---|---|---|
| **Parameters** | **Mean** | **SD** | **Mean** | **SD** |
| Ht. (cm) | 157.55 | 7.45 | 169 | 5.71 |
| Wt. (Kg) | 47.94 | 9.41 | 59.92 | 8.14 |
| 100 M (Sec) | 21.59 | 2.10 | 14.93 | 1.19 |
| 200 M (Sec) | 38.61 | 4.17 | 28.47 | 1.42 |
| 800 M (Min )Women<br>1500 M (Min) Men | 5.12 | 1.57 | 8.11 | 8.44 |
| L.J.(M) | 3.24 | 0.74 | 4.05 | 0.63 |
| S.P (M) | 3.96 | 0.75 | 4.99 | 0.96 |
| MUAC (cm) | 14.16 | 4.36 | 14.12 | 1.05 |
| CC (cm) | 79.73 | 6.45 | 62.45 | 25.14 |
| HC (cm) | 89.08 | 8.30 | 63.65 | 25.47 |
| WC (cm) | 74.57 | 8.31 | 56.88 | 21.81 |

Ht=Height, Wt= Weight,
800 M (Min ) = 800 m run,
MUAC= Mid Upper Arm Circumference
HC= Hip Circumference,
100 M (sec)= 100 m sprint,
200 M (sec)= 200 m sprint,
S.P.= Shot put
CC= Chest Circumference
WC= Waist Circumference
L.J.= Long Jump,

Results presented in table 2, depict the positive and significant correlation between height and weight, between 100 and 200 m sprints, weight and the indicators of body fat i.e., Chest , Hip and waist circumference, 100 m and endurance run. The significant correlation was also found between 800 m and long jump. Negative and significant correlation was found between 100 and 200 m sprints and 800 m run. However, a positive correlation between weight and Shotput, 800 m run and shot put, MUAC and weight, Chest Circumference and shot put, Hip Circumference with shotput was noticed which was significant at 5% level.

**Table 2. Correlation coefficients of athletic performance among women students**

| | Ht (cm) | Wt (Kg) | 100 m sec | 200 m (Sec) | 800 m Min | L.J. (m) | S.P (m) | MUAC (cm) | CC (cm) | HC (cm) | WC (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ht. (cm) | 1 | 0.432** | 0.086 | -0.109 | 0.122 | 0.123 | 0.309* | -0.049 | 0.177 | 0.223 | 0.391** |
| Wt (Kg) | 0.432** | 1 | -0.042 | 0.026 | 0.226 | 0.087 | 0.362 | 0.286* | 0.669** | 0.634** | 0.639** |
| 100m (sec) | 0.086 | -0.042 | 1 | 0.567** | -0.579** | -0.180 | -0.093 | -0.194 | -0.001 | 0.096 | -0.026 |
| 200 m (Sec) | -0.109 | 0.026 | 0.567** | 1 | -0.567** | -0.129 | -0.009 | -0.005 | 0.194 | 0.183 | -0.121 |
| 800 m (Min) | 0.122 | 0.226 | -0.579** | -0.567** | 1 | 0.492** | 0.336* | 0.165 | 0.096 | -0.008 | 0.243 |
| L.J. (Mr) | 0.123 | 0.087 | -0.180 | -0.129 | 0.492** | 1 | 0.240 | -0.122 | 0.151 | 0.111 | 0.121 |
| S.P (m) | 0.309* | 0.362 | -0.093 | -0.009 | 0.336* | 0.240 | 1 | 0.149 | 0.333* | 0.282* | 0.384** |
| MUAC (cm) | -0.049 | 0.286* | -0.194 | -0.005 | 0.165 | -0.122 | 0.149 | 1 | 0.429** | 0.274 | 0.335* |
| CC (cms | 0.177 | 0.669** | -0.001 | 0.194 | 0.096 | 0.151 | 0.333* | 0.429** | 1 | 0.697** | 0.696** |
| HC (cms) | 0.223 | 0.634** | 0.096 | 0.183 | -0.008 | 0.111 | 0.282* | 0.274 | 0.697** | 1 | 0.573** |
| WC (cms) | 0.391** | 0.639** | -0.026 | -0.121 | 0.243 | 0.121 | 0.384** | 0.335* | 0.696** | 0.573** | 1 |

**Correlation is significant at the 0.01 level * Correlation is significant at the 0.05 level

Negative correlation was found between Height and 200 m sprint, Height and MUAC, and Weight and 100 m sprint. It was interesting to note that, there was significant and positive correlation between 100 m sprint and 200 m sprint, but the performance in 100 m sprint was negatively correlated with performance 800 m run, Long Jump, Shot put, MUAC, Chest circumference and waist circumference. These results imply that, body fat becomes a hindrance factor in athletic performance for women students. Whereas for the throw events body fat is a positive factor as it is seen from the results that, performance in shotput was positively and significantly correlated with weight and height.

**Table 3. Correlation coefficients of athletic performance among men students**

| Parameters | Ht (cm) | Wt (Kg) | 100 m (sec) | 200 m (Sec) | 1500 m Min | L.J. (m) | S.P (m) | MUAC (cm) | CC (cm) | HC (cm) | WC (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ht. (cm) | 1 | 0.791** | 0.180 | 0.377** | -0.210 | 0.062 | 0.084 | -0.103 | -0.048 | -0.032 | -0.031 |
| Wt (Kg) | 0.791** | 1 | 0.125 | 0.330** | -0.132 | 0.147 | 0.036 | -0.062 | -0.113 | -0.105 | -0.088 |
| 100 m (sec) | 0.180 | 0.125 | 1 | 0.564** | -0.056 | -0.187 | -0.002 | -0.230* | 0.432** | 0.432** | 0.371** |
| 200 m (Sec) | 0.377** | 0.330** | 0.564** | 1 | -0.197 | 0.076 | 0.046 | 0.071 | 0.082 | 0.086 | 0.126 |
| 800 m (Min) | -0.210 | -0.132 | -0.056 | -0.197 | 1 | -0.011 | -0.074 | -0.041 | 0.134 | 0.132 | 0.174 |
| L.J. (m) | 0.062 | 0.147 | -0.187 | 0.076 | -0.011 | 1 | -0.088 | 0.132 | -0.383** | -0.393** | -0.338** |
| S.P (m) | 0.084 | 0.036 | -0.002 | 0.046 | -0.074 | -0.088 | 1 | 0.250* | 0.083 | 0.084 | 0.210 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MUAC (cm) | -0.103 | -0.062 | -0.230* | 0.071 | -0.041 | 0.132 | 0.250* | 1 | -0.390** | -0.379** | -0.234* |
| CC (cm) | -0.048 | -0.113 | 0.432** | 0.082 | 0.134 | -0.383** | 0.083 | -0.390** | 1 | 0.995** | 0.914** |
| HC (cm) | -0.032 | -0.105 | 0.432** | 0.086 | 0.132 | -0.393** | 0.084 | -0.379** | 0.995** | 1 | 0.916** |
| WC (cm) | -0.031 | -0.088 | 0.371** | 0.126 | 0.174 | -0.338** | 0.210 | -0.234* | 0.914** | 0.916** | 1 |

**Correlation is significant at the 0.01 level * Correlation is significant at the 0.05 level

Interesting results were revealed from correlation matrix for men students, the height and weight was negatively correlated with performance in 1500 m run MUAC, CC, HC and WC, but positive and significant correlation was found with performance in 200 m sprint, but with 100 m sprint. Positive but significant correlation was found between100 m sprint and CC, HC and WC and negative and significant correlation was found between Long Jump and CC, HC and WC. Negative but non-significant correlation was found between 1500 m run, Long jump, Shotput, MUAC. This indicates that, lesser body fat could enhance the athletic performance among men students.

**Table 4. Consumption of major nutrients by the undergraduate students**

| | Men students | | Women students | |
|---|---|---|---|---|
| | **RDA** | **Actual intake** | **RDA** | **Actual intake** |
| Calories(Kcal) | 2975 | 2950 | 2225 | 1802 |
| Protein (g) | 60 | 47.71 | 50 | 48 |
| Fats and oils(g) | 30 | 45 | 40 | 40 |
| Calcium(mg) | 400 | 154 | 400 | 154 |
| Iron(mg) | 28 | 15.75 | 30 | 21.30 |

The results presented in table 4 indicate that, there is a lesser consumption of protein among both men and women students. But fats and oils are consumed as per the RDA among girls and is slightly more than the RDA among men, but overall calories did not exceed the RDA. But the minerals consumption for Ca and Iron was far below the RDA. Hence there is need to increase the quantity of vitamins and minerals through the inclusion of more of vegetables and fruits in the diet. There is also need to educate the students regarding ill effects of under nutrition in general and micronutrient deficiency in particular. These findings are in line with a study conducted by Ahmed *et al.* (1998) indicate that the diets of these girls tended to be inadequate both for macronutrients and micronutrients, with significant health implications. To support these findings the BMI of both the groups was computed, and it was found that, a large majority of the women students were under the category of <20 BMI, followed by 20-25, and only two women students out of 51were in the category of obese with BMI over 27, associated with increased risk of health problems such as heart disease, high blood pressure and diabetes. While, in case of men students, majority (70.67) were in the group of 20-25 BMI, indicating Ideal index range associated with the lowest risk of illness and 28 percent were under 20 BMI category which indicates associated health problems for some individuals. None of the men students were in obese category. Nutrition education programs

in schools should emphasize the importance of healthy balanced diets for growth and health maintenance of children as well as dietary prevention of diseases.

**Table. 5.Classification of students by BMI**

| **BM1** | Women students | Men students |
|---|---|---|
| Under 20 | 31<br>(60.78) | 21<br>(28) |
| 20-25 | 17<br>(33.33) | 53<br>(70.67) |
| 25-27 | 1<br>(1.96) | 1<br>(1.33) |
| Over 27 | 2<br>(3.92) | - |

N.B. Figures in parentheses indicate percentages

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