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A study of different physiological fitness components of laborers of East Delhi

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Abstract

A study was conducted on labourers of east Delhi to assess the physiological fitness components. The totals of 40 subjects were taken from the age of 18 to 60. The subjects, who indulge in building construction, work for about 8 hours a day were considered. Four variables (BMI, BMR, VC, and WAIST-HIP RATIO) were considered to assess their physiological fitness. To find out the results descriptive, Pearson correlation and t-test were calculated. T-test was calculated for the comparison between two age groups of labourers to find out the mean difference. After calculation, it was found that BMI is significantly correlated with BMR and WAIST-HIP RATIO at 0.01 level of significance. VC also found significantly correlated with BMR at the 0.01 level. The BMI was found significantly correlated with VC at the level 0.05 level. Further, conclusion found that there were no measure differences between both age group' variables values. It was also concluded that persons who indulge in vigorous physical activity or work, they have less chance to being obese and get ill.

Keywords: Obese, waist-hip ratio, fitness, laborer, body mass index, vital capacity

Introduction

Today, about 50-60 % population of India are working as labour and out of these category 20 % or more working in building construction work like lifting of bricks, and other building materials and more. Keeping this condition in mind, we thought to study on those people who indulge in building construction work. To study of their specific physiological parameters, we took 40 labour from east Delhi. We took those labors who work for 8-10 hours a day and live very simple life with minimum available convenience. They also have very poor economic condition. Therefore, they were unable to have required calorie for performing that particular kind of task. In this regard, it is very interested that how affect their economic condition to their physiological and physical parameters those we selected for the study.

The developing nations rely largely on manual labour to accomplish daily work tasks rather than on the use of more expensive machines. 500 million tons of sugar cane produced annually in the world, over 75% is cut by hand. Sugarcane cutting is heavy work and, because the productivity can be measured relatively easily, these workers have been the subjects of several studies in recent years.

A report showed that Colombian sugar cane cutters worked at an average intensity of about 35% of their vo₂ max during the 8-hour on one work day. The subjects were able to work for 8 hours provided that the effort did not exceed 35% of the vo₂ max.

About 30% of the cutters in Columbia exerted an effort in excess of 40% of their vo₂ max during the 8-hour workday. The data have been examined to determine whether those workers using a greater percentage of vo₂ max were in any way different from their co-workers.

Statement of the problem

In this problem, the researcher has showed the physical fitness condition of the labor category in Delhi. What work they do and how their work influences their specific physical fitness condition. The scholar discussed the present topic with guide and other experts to take this problem formally sated as - "An assessment of relationship among different physical fitness components of labor category in east Delhi."

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Methodology

Forty male laborers from East Delhi between the age group of 18-60 years were selected as the subject of the study. The subjected were divided in to two groups- first under 30 years of age and second 31 to 60 years of age. The subjects were working for 8 hours a day (building construction works). A simple random sampling was used to select the subjects from different residential area of East Delhi.

The Health Related Physical Fitness variables selected for the study were - BMR, WAIST-HIP RATIO, BMI, and VITAL CAPACITY. The BMR was assessed using Home Benedict's equation by putting the required values of equation, waist-hip ratio was assessed using measurement with the help of measuring tape, BMI was assessed by formulae given by

Quetelet's equation by putting the required values to the formulae, and vital capacity was assessed by using dry spirometer.

Result and Findings

The data collected on the physical fitness on labourer's category were subjected to statistical analysis using Descriptive statistics: mean, standard deviation (SD), were calculated to find the distribution of each variable in the total sample. Correlation regression analyses were used to find the degree and for comparison the 't' test. To find out the significant correlation among the different physical fitness components 0.01 and 0.05 level was considered.

Table 1: Descriptive Statistics of selected variables

S. No.	Variables	Mean/ SD-under 30 years	Mean/ SD- 31-60 years	Mean difference	't' test	Standard error mean under30/31-60
1.	Body mass index	19.98/3.11	21.38/2.91	-1.39	.198	.69619/.65073
2.	Vital capacity	2195/812.06	1815/584.24	380	.085	181.58/130.64
3.	Basal metabolic rate	1421.9/121.43	1355.2/135.43	66.70	.139	27.1540/30.2834
4.	Waist-hip ratio	.86/.03	.91/.07	-.05	.007	.00841/.01589

Depicted in table 2 showed the BMI of two group (under 30 years of age and 31-60 years of age) BMI has the mean 19.98 with SD 3.11 for the group of under 30 years of age whereas mean 21.38 with SD 2.91 for the age group of 31-60 years. Which showed -1.39 as mean difference between both groups? In the comparison of BMI of both group t test was found .198. Vital capacity has the mean 2195 with SD 812.06 for the group of under 30 of age whereas mean 1815 with SD 584.24 for the age group of 31-60 years. Which showed 380 as mean difference between both groups? In the comparison vital capacity of both group t test was found .085. Basal metabolic rate has the mean 1421.9 with SD 121.43 for the group of under 30 of age whereas mean 1355.2 with SD 135.43 for the age group of 31-60 years. This showed 66.70 as mean difference between both groups. In the comparison vital capacity of both group t-test was found .139. Waist-hip ratio has the mean .86 with SD .03 for the group of under 30 of age whereas mean .91 with SD .07 for the age group of 31-60 years. This showed .05 as mean difference between both groups. In the comparison vital capacity of both group t test was found .007.

** . Correlation is significant at the 0.01 level

From table 1, it has been seen that BMR is significantly correlated with BMI and vital capacity at 0.01 level and significantly correlated with waist-hip ratio at 0.05 level. BMI is also significantly correlated with waist-hip ratio at 0.01 level and significantly correlated with vital capacity at 0.05 level.

Table 3: Descriptive statistics of selected variables of selected subjects

Variables	Mean	SD
BMI	20.68	3.05
VC	2005	724.28
BMR	1388.51	131.38
WH RATIO	.88	.06

The descriptive stats in table 1, indicated that the mean of BMR of respondents was 1388.51 with SD 119.73. The minimum value of BMR was 354.17 and the maximum value was 902.85. The average BMI of respondents was 20.68 with SD 3.05. The minimum value of BMI was 14.88 and the maximum value was 29.00. The average vital capacity of respondents was 2005 with SD 724.28. The minimum value of vital capacity was 1000.00 and the maximum value was 4500.00. The average waist-hip ratio of respondents was .89 with SD .064. The minimum value of waist-hip ratio was .80 and the maximum value was 1.05.

Table 2: Pearson Correlation matrix of selected variables

	VC	BMR	W.H. RATIO
BMI	.343*	.627**	.663**
VC	-	.496**	.016
BMR	-	-	.279

*. Correlation is significant at the 0.05 level

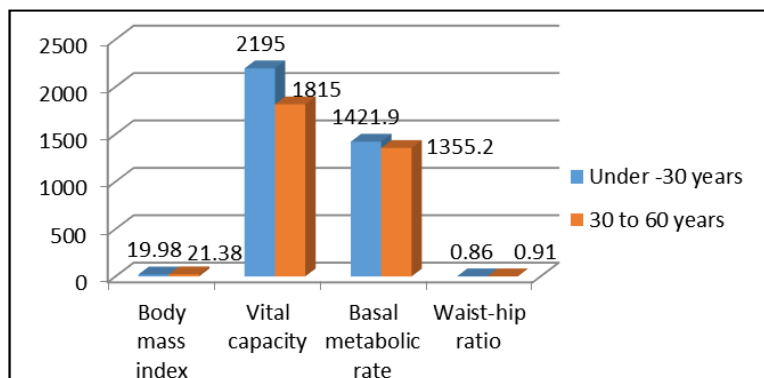


Fig: Graphical presentation of mean of both groups on selected variables

Discussion of findings

In the discussion, the mean value of BMI for all the subjects showed that all the subjects come under the normal BMI value, which indicated that their body fat percentage is normal. At this level they have not any chance to be obese until they leave this kind of work. The mean value of VITAL CAPACITY also comes under normal category which indicated that their lungs working efficiently and they all are able to inhale maximum volume of air and they can exhale forcefully. Mean value of WAIST-HIP RATIO also indicated that the subjects come under the normal WH RATIO category, which indicated that they also have less chance to get ill.

In table 2, indicated that BMI was significantly correlated with BMR and WAIST-HIP RATIO at the level of 0.01, which showed that if BMI comes under normal value then BMR and WH RATIO also comes under the normal values. One more thing is that when BMI will increase then WH RATIO will also be increased as a result of correlation of both variables. On the other hand,

BMI will increase then BMR will also be decreased or vice-versa. In case of VC, BMI is also significantly correlated with VC which means that if BMI will increase then VC will decrease or vice-versa. Because increasing of VC means supply of air has decreased in lungs as a result oxygen will also be decreased in the blood which influences the body fat percentage in the form of increasing BMI. Another case of VC, VC was found significantly correlated with BMR at the level of 0.05. This showed that VC increase, BMR also increased.

According to table 1, mean value of BMI was found 19.98 and 21.38 for the age group of under 30 years and 31-60 years respectively, indicated that body fat percentage is increased as age increased but BMI comes under the normal range of standard norms of both age groups because both the groups doing same kind of work but little fat increased was found in the age 31-60. Same as it is in another three variables, there was not far difference in the mean value of both age groups but all three's mean values comes under the normal. As increasing the age vital capacity decreased, basal metabolic rate decreased but waist-hip ratio increased because when both VC and BMR decreased due to age factor then WH RATIO and BMI increased. Otherwise all the value of both groups comes under normal range due to same no of working hours, same kind of work and same diet they have. Another thing need to reveal that vigorous work may keep you away from disease and reduced the chances of getting ill keep you in normal range of physiological variable's values.

Conclusion

Vigorous physical activity keeps people fit and keep them in physiological balance. Those who indulge in vigorous physical activity they have minimum chance to being obese and get ill. There was found some difference among above physiological variable's value due to the age difference but all were comes under normal range.

It is also found that those who indulge in vigorous physical activity, they remain always fit until they leave their work to do.

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