

Measures and Physical Fitness Level of the College Going Students

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ABSTRACT Physical Fitness is the basis of dynamic and creative intellectual activity. The intelligence and skill can only function at the peak of their capacity when the body is healthy and strong. In the present situation there is need for the students to measure and analyze their physical fitness for their own benefit and improvement. Hence, the study was taken with the objective to analyse the physical fitness of the college going girl students. Thirty final year girl students studying Home Science degree were selected for the study. The general health condition of the students was found to be 'Normal'. The tests of measuring physical fitness level showed different results. Among the various tests 'step test ergometer' is commonly considered. This test revealed that majority of the students belonged to the 'Poor' physical fitness condition. This states that exercise is an essential element to achieving and maintaining physical fitness.

INTRODUCTION

There is danger at present time in the enthusiasm for cramming of the brains of our young people with facts, scientific or other wise, that there will be inadequate time for the establishment and perpetuation of physical fitness, which should never atrop.

Physical fitness according to the President's Council on Fitness, is a broad quality involving medical and dental supervision and care immunization and other protection against disease, proper nutrition, adequate rest, relaxation, good health practices, sanitation and other aspects of healthful living. It further states that exercise is an essential element to achieving and maintaining physical fitness. Physical fitness is the basis of all the activities of our society. If we fail to encourage physical development and prowess, we will undermine our capacity for thought and for work. Thus physical fitness of our citizens is a vital prerequisite to a country's realization of its full potential as a nation and to the opportunity of each individual citizen to make full and fruitful use of his/her capabilities (Seaton et al., 1969).

According to Chuhan (1999), fitness refers to the physiological fitness or the cardio

respiratory fitness and it was determined by the maximum aerobic power (VO_2 Max) of an individual.

The present study emphasizes on the physical fitness of the female college students. There is need for the students to measure and analyze their physical fitness for their own benefit and improvement. For better productivity the students should be healthy and have good physical fitness. The present study is taken with the objective to analyse the physical fitness of the college going girl students.

METHODOLOGY

The study was carried out at College of Rural Home Science, University of Agricultural Sciences, Dharwad. Thirty final year girl students studying B.H.Sc. degree classes were selected for the study. The physical parameters were recorded by using various equipments designated for the purpose as detailed below.

1. Body Height (cms): Anthropometer rod
2. Body Weight (kgs): Human weighing balance
3. Blood pressure: Sphygmomanometer
4. Body composition: Skin fold caliper
5. Grip strength: Grip dynamometer

Measures of Physical fitness

The physical fitness of the college girls was analysed by using various methods as given here:

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1. Estimation of the Aerobic Capacity (VO_2 Max) of the Respondents: Based on the height and weight of the respondents the consumption of maximum volume of oxygen was estimated by using the following formula. The respondents were classified accordingly into various fitness grades as per the classification given by Saha (1996).

$$VO_2 \text{ Max (l/min)} = 0.023 \times \text{Body weight (kg)} - 0.034 \times \text{age (yrs)} + 1.652.$$

$$VO_2 \text{ Max (ml/kg. min)} = VO_2 \text{ max (l/min)} / \text{Body weight} \times 1000$$

2. The Step Test Ergometer Method and Heart Rate Method: This is a simple method of measuring the ability of one's circulatory capacity to recover from the exercise of an endurance nature. It is prescribed for the young people. The heart rate monitor was fitted to the selected respondents and five minutes relaxation time was given to adjust to the heart monitor. Then the monitor was switched on to record the heart rate data. Then the subjects were made to sit in a relaxed position for five minutes to get the resting heart rate data. From sixth minute onwards they were asked to perform the step test exercise on the step stool measuring 29.0 cms breadth, 45 cms length and 24 cms height.

The subjects were asked to stand up and face the step up bench. Particular attention should be paid here to indicate the method and rhythm used in stepping. Subjects should breath fully throughout and straighten the knees completely on top of the bench. With help of Metronome the cadence can be kept to thirty steps per minute. Continue this until they get exhausted or up to five minutes, at the rate of 30 steps per minute. Immediately after termination of the exercise the subjects were given rest in sitting position for five minutes for recovery. The heart rate was recorded continuously for the rest, exercise and recovery periods. Then the physical fitness index score was determined by using the following formula. Later the subjects were classified as per the classification score given by (Varghese et al., 1994).

$$PFI = \frac{\text{Duration of stepping (in sec)}}{\text{Sum of recovery heart rate at 1, 2 \& 3 minutes}} \times 100$$

Rate of Perceived Exertion: The exertion perceived by the students after performing the step test ergometer was recorded by using the five point scale (from Very light -1 to Very heavy-5 after Varghese et al., 1994).

3. Body Mass Index (BMI): The Body mass

index of the subjects was calculated by using the Quetelets Body Mass Index formula. Based on this the respondents were classified as per the classification (Garrow, 1987) in different grades of nutritional status.

$$\text{Body Mass Index} = \text{Weight (kgs)} / \text{Height}^2 \text{ (m)}$$

4. Barach Index: Barach Energy Index determines the amount of energy the heart expends in blood output. The test employs systolic blood pressure together with the pulse rate count per minute. The subject rests before taking the test so that the resting pulse count can be obtained. The test given to the subject in a sitting position. It is computed as follows (Willgoose, 1961).

$$\text{Energy Index} = \frac{\text{Systolic pressure} + \text{Diastolic pressure} * \text{Pulse Rate}}{100}$$

RESULTS AND DISCUSSION

The mean physical parameters of the college going students are presented in the table 1. The mean age was 21.60 years with the SD of ± 0.68 , mean height was 154.75 cms with the SD of ± 5.82 and the mean weight was 48.33 kgs with the SD of ± 6.48 . The mean blood pressure of the students was observed to be 104 / 67 with the pulse rate of 70 beats/min. The mean body temperature was 97.27° F. The average grip strength of right and left hand of the respondents was 20.87 kg and 19.07 kg respectively.

Table 2 depicts the classification of the respondents according to aerobic capacity. Majority of the students (86.67 %) belonged to 'Very Good' physical fitness level followed by 13.33 per cent of them belonged to 'Excellent' physical fitness level. None of the students belonged to 'Good' and below 'Good' physical fitness category.

But as per the step test ergometer test the physical fitness level of the students revealed the reverse trend (Table 3). The results showed that

Table 1 : Physical characteristics of the subjects.

S. No.	Physical characteristics	Mean	S.D.
1.	Age (years)	21.6	0.68
2.	Height (cms.)	154.75	5.82
3.	Weight (Kgs.)	48.33	6.48
4.	Blood Pressure /S	109.55	17.54
5.	Blood Pressure /D	67.25	8.32
6.	Pulse	70.80	14.94
7.	Grip Strength (Left Hand)	19.07	4.22
8.	Grip Strength (Right Hand)	20.87	2.78

Table 2: Physical fitness of the selected respondents according to aerobic capacity (N=30).

Aerobic capacity[VO ₂ Max (ml/kg.min)]	Frequency	Percentage
Poor [<15.0]	-	-
Low Average [15.0-22.5]	-	-
High Average [22.6-45.0]	-	-
Good [30.1-37.5]	-	-
Very Good [37.6-45.0]	26	86.67
Excellent [>45.0]	4	13.33

Table 3: Physical Fitness Index of the selected respondents according to Step Test Ergometer (N=30).

Physical Fitness Level (PFI Score)	Age Group (20-45 years) N=30	
	Frequency	Percentage
Poor (< 80)	19	63.33
Low Average (81-100)	9	30.00
High Average (101-115)	2	6.67
Good (116-135)	-	-
Very Good (136-150)	-	-
Excellent (>150)	-	-

a maximum of 63.33 per cent of the respondents fell in the 'Poor' physical fitness level followed by 'Low Average' (30 %) 'High Average' category (6.67 %). None of them belonged to 'Very Good' and 'Excellent' physical fitness level. This is because the students never do the exercises regularly and hence the fitness is lowered.

Majority of the students (40%) belonged to 'Normal' range of Body Mass Index classification followed by 'Chronical Energy Deficiency Grade I- Mild' range (30 %). About 10 per cent of the students belonged to 'CED Grade III-Severe' and only 6.67 per cent of them belonged to 'Obese Grade I' range. None of them belonged to 'CED Grade II- Moderate' and 'Obese Grade II range' (Table 4).

Classification of the students according to Barach Index is shown in table 5. Majority of the respondents (90%) fell in the 'Normal' Energy Barach Index. About 10 per cent of the students were suffering from 'Hypo tension'. None of them were identified as 'Hypertension' patient. This is probably because the students were of younger age group.

CONCLUSION

The general health condition of the students

Table 4: Classification of the selected respondents according to Body Mass Index (N=30)

BMI Class	Frequency	Percentage
CED Grade III- Severe (>16)	3	10.00
CED Grade II- Moderate (16.0 - 17.0)	-	-
CED Grade I- Mild (17.0 - 18.5)	9	30.00
Low Weight Normal (18.5 - 20.0)	4	13.33
Normal (20.0 - 25.0)	12	40.00
Obese grade I (25.0 - 30.0)	2	6.67
Obese grade II (25.0 - 30.0)	-	-

Table 5: Classification of the selected respondents according to Barach Index (N=30).

Barach Index	Frequency	Percentage
Hypotension (<90)	3	10
Normal (90-200)	27	90
Hypertension (>200)	-	-

was found to be 'Normal'. The tests of measuring physical fitness level showed different results. Among the various tests 'step test ergometer' is commonly considered. This test revealed that majority of the students belonged to the 'Poor' physical fitness condition. This states that exercise is an essential element to achieving and maintaining physical fitness.

Strength, speed, endurance (cardiovascular capacity) and other desirable physical qualities can only be developed through vigorous activity, but complete fitness is achieved through a sensible balance of all these provisions adapted to age, maturity and capability of the individual.

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