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A study on physique and fitness status of university active female student

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Abstract

The present study was conducted for assessing physique and fitness status of university active female students. For that, forty University active female students studying with physical education subject who regularly participated in physical education exercise programme, were selected as subjects of the study. Selected variables of physique were Height, Weight, Body Mass Index (BMI), Percentage Body Fat (%BF), Fat Mass (FM), and Lean Body Mass (LBM). Among Physical Fitness components only strength and flexibility were selected for this study. Results of the study revealed that – Height and weight of the subjects were in normal stature as Indian female, mean of height and weight were 153 Cm and 46 Kg respectively. Majority of the female students (52%) were in healthy category in respect of BMI according to norms. In case of %BF, most of the subjects (65%) were belonging in lean category. There was a negative relationship between body fat and flexibility. There were a significant positive relationship between height and weight, between body weight and all selected variables of physique. 48% active female students were in excellent category of showing performance in leg explosive strength.

Keywords: Physique, fitness, active female students.

Introduction

“Physical fitness” is a positive quality of life, extending on a scale from death to “abundant life”. We living individuals have some degree of physical fitness which varies considerably in different people and in the same individuals at different times. Physical fitness is the capacity for sustained physical activity without excessive fatigue or as the capacity to perform every day activities with reserve energy for emergency situations. Physical fitness is a product of physical activity that includes a set of attributes that people have or achieve relating to their ability to perform physical activity (USDHHS1996). Among the attributes of physical fitness, body composition; flexibility; muscular strength; muscular endurance; and cardio-vascular endurance are belong under the sub heading, Health Related Physical Fitness (HRPF). Among the HRPF components, strength; flexibility; endurance involve some types of performance and these components are decrease after a certain years of life, but, it can be maintained and the process of decrease may be delay through a regular exercise programme. Another component of HRPF is Body composition, which refers to the body in terms of lean body mass and fat mass, is comparatively more convenient to measure an individual’s Physical health. However, all these components of HRPF have a relationship with good health (ACSM 1998). Aristotle has also stated that a sound mind lives in a sound body, and it is the key to education, good citizenship, and a happy life(J.F.Willams 1961). Proper exercise program, proper nutrition, adequate rest , good health habits etc. are influencing factors for achieving, maintaining, and improving a considerable level of HRPF in so calling health. But in the age of technology obesity and physical inactivity are increasing dramatically through worldwide that hampered HRPF. In this situation the purpose of the study was to assess health related physical fitness of university active female student who participated in exercise program regularly.

Methods and Material: Total forty (40) female subjects aged between 22 to 25 years, who were studying in post graduate courses at University of kalyani , Department of Physical Education were randomly selected for this study .The criteria measured for this study were anthropometric measurements and selected fitness components. Anthropometric measurements variables were Standing height measured by stadiometer, body weight by

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using weighing machine, body mass index by height weight ratio and fat percentage and also lean body mass are obtained from circumference method. Fitness variables were leg

strength and flexibility, these were measured by standing broad jump and sit and reach test respectively.

Table: 1 Personal profile of the subjects

Subject	No. Of subjects	Age (Years)	Height (M)	Weight (Kg)
Active female students	40	Mean 23.64 S D ±0.70	Mean 1.53 S D ±0.06	Mean 46.00 S D ±7.16

The personal profile of the subjects were mentioned in table -1.

Results & discussions

Table: 2 Mean and S D of above mentioned variables of active female students

VARIABLES													
LES (m)		Flexibility		Height(m)		Weight(kg)		BMI(kg/m ²)		% BF		LBM(kg)	
Mean	S D	Mean	S D	Mean	S D	Mean	S D	Mean	S D	Mean	S D	Mean	S D
1.91	±0.23	6.77	±1.75	1.53	±0.06	46.00	±7.16	19.22	±3.55	15.75	±4.58	38.55	±4.83

Table 2 Represented the mean and standard deviation of selected variables. Mean and SD were for Height 1.53M, ±0.06; for weight it was 46.00Kg ±7.16; for BMI, 19.22 ±3.55; for Percentage Body fat it was 15.75 ±4.58; for lean

body mass, 38.55 ±4.83. For leg explosive strength and flexibility mean and SD were 1.91 ±0.23 and 6.77 ±1.75 respectively.

Table: 3 Coefficient of correlation among selected variables

	LES	Flexibility	Height	Weight	BMI	%BF	Fat mass	LBM
LES	1.000	0.104	0.401*	0.250	0.259	-0.169	-0.031	0.391*
Flexibility		1.000	-0.167	-0.262	-0.104	-0.240	-0.298	-0.192
Height			1.000	0.533**	0.024	0.143	0.312	0.615**
Weight				1.000	0.711**	0.638**	0.837**	0.933**
BMI					1.000	0.511**	0.637**	0.636**
%BF						1.000	0.948**	0.324
Fat mass							1.000	0.585**
LBM								1.000

*- Significant at 0.05 level (.338), **- Significant at 0.01 level (0.433)

Table 3 Represented the co-efficient of correlation of selected variables of the subjects.

Table: 4 Percentage of active female student in BMI norm (WHO 2000)

Category	Under weight	Normal	Pre obese	Obese
Range	(<18.50)	(18.50- 24.99)	(25.00- 29.99)	(>_30)
Student percentage	44%	52%	4%	Nil

Table 4 Represented the percentage of subjects belong in different category of obesity proposed by WHO. Among the subjects 44% were in the category of underweight, 52% were

in normal category, and 4% subjects were in pre obese category. There was no any subject who participate regularly in exercise programme, in obese category.

Table: 5 Percentage of active female students in %BF norm (ACSM 2001)

category	Lean	Normal	Above average	Over fat	obese
Range	17 - 22	22 - 25	25 - 29	29 -35	> 35
Student%	65.00%	33.00%	02.00%	Nil	Nil

Table 5 Showed the result of percentage of the subjects in respect of norms of percentage of body fat. Among them

65% were in lean category, 33% were in normal category, and 2% were in above average category.

Table: 6 Percentage of active female students in Leg Explosive strength according to norms (Hede,C et al. 2011)

Category	Excellent	Above average	Average	Bellow average	Poor
Reference women	>1.91M	1.91 – 1.78 M	1.77- 1.63M	1.62- 1.50 m	<1.50 m
% of active female student	48%	28%	16%	4%	4%

Table 6 Showed that 48% active female were in excellent range, 28 % were in above average, 16% were in average category. Bellow average and poor categories obtained only 4% in each.

Table: 7 Percentage of active female students in flexibility according to norms (Davis,B.et al.2000)

Category	excellent	Above average	average	Bellow average	Poor
Women (16 to 19 years old)	>15cm	15 – 12 cm	11.9 to 7 cm	6.9 to 4.0 cm	<4
% of subject of the study	Nil	Nil	44%	66%	

Table 7 Showed the percentage of active female University student in flexibility in comparison with standard norms constructed with female subjects aged between 16 to 19 years. Among the subjects 44% were in average category and 66% were in bellow average category.

Discussion

In case of age, height, and weight relationship Singal (1980) showed that adult stature of Indian female was around 153 cm and body weight between 40 to 45 kg. The findings of the present study in respect of stature and body mass were in close proximity with other researcher. Buskrik et al. (1955) found that fat was inversely related to the extent of participation in physical activity. Present study also revealed that 65% of the active female students were in lean category in case of body fat percentage. Loubach and Mc Convilly(1966) found a negative correlation between body fat and flexibility .The present study also revealed a negative correlation between %body fat and flexibility . In case of strength most of the subjects were in excellent category and in case of flexibility 44% subjects were in average category.

Conclusion

1. In case of B M I, majority of active female students (52%) were in the normal range i.e. they were in healthy category
2. In case of percentage Body Fat 65 % of active female students were in lean category and 33% were in normal category
3. There was significant relationship between leg explosive strength and standing height.
4. There was significant relationship among Body weight and BMI, Body weight and % Body Fat, body weight and lean body weight.
5. There was a significant relationship between height and weight.
6. There was a negative relationship between body fat and flexibility.
7. Most of the students (48%) showed excellent performance in leg explosive strength according to norms.

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