

Research Paper :

Health status of farm women

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ABSTRACT

The main thrust of the project was to determine the physical fitness status of selected farm women. One hundred and sixty farm women each in the age group of 25-35 and 35-45 years, free from respiratory or any serious health problems were selected for the study. Study revealed that height of the farm women ranged between 138-164 cm, weight from 34-62 kg and VO_2 from 25-50 ml.kg⁻¹.min. All the younger age group women *i.e.* 25-35 yrs were in the good category of aerobic capacity where older women were on average and low average categories. It was observed that age was negatively correlated with VO_2 (ml.kg⁻¹.min.) indicating that increase of age, VO_2 tends to decrease. On the basis of BMI classification majority of farm women were found in ectomorph category indicating poor developed body. Results showed that maximum farm women were found in high average PFI score. Very few per cent of women were in very good PFI score category. Though all the selected parameters of physical fitness, over all health status of women was found average.

Key words : Physical fitness index(PFI), VO_2 , Body mass index (BMI)

The contribution of farm women in Indian agriculture is estimated to be 50-60% (Anonymous, 1981). Women at any stage are ever busy with household chores, children and family. They continue in their traditionally designed 'work' roles at home as well as in field, much longer than men. They hail from an area lacking in social inputs like primary and secondary education, drinking water and health services for physical development and social progress. The over burdened and under nourished rural women performing agricultural operations as well as household and allied activities involved physical exertion. To ensure the better health and safety, it is important to have good relationship between their occupational load, physical fitness and the food which they regularly eat. Hence, the present study was carried out with objectives to study the health status of selected farm women involved in farm activities.

METHODOLOGY

Selection of subjects:

A sample of 160 rural farm women in the age group of 25-35 and 35-45 years free from respiratory or any serious health problems were selected for the study. In order to avoid errors in the experimental data, suitability of the subject was ascertained by measuring the physiological parameters:

- Body temperature for three minutes – Not above 99%
- Blood pressure – 120/80 ± 10
- Heart rate – 70 - 90 b.min⁻¹

The subjects who met the above said conditions were selected for the experiment.

Physical fitness of the selected subject:

Physical fitness of the selected subjects was measured by standardized simple step stool test method (Varghese *et al.*, 1996).

Specifications of the step stool test were as follows:

Dimensions of stool:

- Length - 45 cms
- Breadth -30 cms
- Height-24 cm

Duration of stepping activity - max. 5 min.

Stepping rate - 30 steps/min (controlled with metronome)

The selected subject was given enough rest and then her resting heart rate was measured with the help of heart rate monitor (Polar Sport TM). After complete rest, the subject was asked to do the stepping activity on the wooden stool ergometer specially made for the purpose. During stepping activity, heart rate of the subject was recorded for the entire stepping period with an interval of one minute each.

After 5 minutes of stepping activity, the subject was asked to sit on resting chair and her recovery pulse rate for 5 minutes at an interval of one minute each was again recorded. The physical fitness score was calculated by using the following formula :

$$\text{PFI} = \frac{\text{Duration of stepping (seconds)}}{\text{Sum of 1, 2 and 3 min. recovery pulse count}} \times 100$$

Physical fitness on the basis of Vo_2 max:

Vo_2 max of the selected subject was calculated using the following regression equation (Saha, 1996).

$$\text{Vo}_2 \text{ max (ml.kg}^{-1} \text{ . min.)} = 0.023 (\text{PFI score}) - 0.034 \times \text{age (yrs)} + 1.652$$

Body composition of the selected subject:

Estimation of Lean body mass (LBM) was determined from skin fold thickness at four sites *i.e.*, biceps, tricep, subscapular and supreiliac with the help skin fold calipers by using the methods proposed by Durnin and Rahman (1967). The lean body mass was assessed with the help of the following formula:

$$\text{LBM (Kg)} = \text{Body weight} - \text{Fat weight}$$

$$\text{Fat weight} = \frac{\text{Body weight} \times \% \text{ fat}}{100}$$

$$\% \text{ fat} = (4.95 / D - 4.5) \times 100$$

where, D is body density.

Body density = $1.1599 - (0.0717 \times \log \text{ of sum of four skin folds})$

Body mass index (BMI):

Body mass index of the selected subjects was calculated by using the following formula :

$$\text{BMI} = \frac{\text{Weight (kg)}}{(\text{Height})^2 \text{ (m)}}$$

FINDINGS AND DISCUSSION

The data collected from two experimental age groups were analysed statistically to ascertain the variation in the physical characteristics of the subjects. Results are presented in Table 1, 2 and 3.

Physical characteristics:

From the data presented in Table 1, it could be observed that mean age of the subjects belonging to the age group I and age group II was 29 years and 39 years, respectively. The height of the women ranged from 138-164 cms but on an average height of all the selected women was 150 cms. Weight of the selected subjects ranged from 34-62 kgs. Mean weight of the subjects belonging to age group II *i.e.* 35-45 years was significantly higher (45.82 ± 6.59) than that of the younger age group women (42.65 ± 5.81). Values of lean body mass of the selected subjects were similar for both age groups.

Body type:

Body type of the respondents based on the Quetlet's index revealed that majority of the respondents (60%) belonged to ectomorph group having slender body type and higher percentage of women (49%) from the age group of 35-45 years were mesomorphic. Only 6% of the subjects belonged to endomorph type of body built. The similar results were reported by Mrunalini (2001) regarding physical fitness status of farm women of Andhra Pradesh involved in paddy transplanted and harvesting.

Physical fitness index (PFI):

The scores of physical fitness index of age group I *i.e.* 25-35 years was 106.76 ± 11.89 and that of age group II was 108.36 ± 12.24 . There was no significant difference found in the scores of PFI when Z test was applied (Table 1). Distribution of the sample frequency

Table 1 : Physical characteristics of the subjects

Sr. No.	Characteristics	Age group I (25-35 years)		Age group II (35-45 years)		Z values
		Mean	SD	Mean	SD	
1.	Age (years)	29.10	4.27	39.19	3.04	17.46
2.	Height (cms)	150.08	5.60	149.86	4.89	0.22 NS
3.	Weight (kgs)					
	a. Gross	42.65	5.81	45.82	6.59	3.15**
	b. LBM	32.50	4.62	32.96	5.05	0.58 ^{NS}
4.	BMI	19.05	2.71	20.50	2.86	3.23 **
5.	VO^2 (ml.kg-1.min)	36.87	8.17	31.18	6.55	4.88**
6.	PFI	106.76	11.89	108.36	12.24	0.82 ^{NS}

** indicates significance of value at P=0.01

against PFI (Table 2) indicated that maximum per cent of subjects (51%) scored high average on their physical fitness exercise and nearly 27-32 % of subjects were at a lower level as per physical fitness index. Only 4 per cent of the subjects were having better physical fitness to work.

Table 2 : Distribution of the respondents according to body type, PFI, BMI and VO₂

Body type	Age group	
	I (N=93)	II (N=67)
Ectomorph (<20)	62(67)	29 (43)
Mesomorph (20-25)	27(29)	33 (49)
Endomorph (>25)	4(4.3)	5(7.4)
PFI		
Poor (upto 80)	-	-
Low average (81-100)	30(32)	18(27)
High average (101-115)	47(51)	34(51)
Good (116-135)	13(14)	12(18)
Very good (136-150)	3(3.2)	3(4.4)
Excellent (Beyond 150)	-	-
BMI		
CED grade III (<16.0)	-	-
CED grade II (16.0-17.0) Moderate	6(6.4)	3(4.4)
CED grade I (17.0 – 18.5) Mild	22. (24)	7(10.4)
Low weight normal (18.5 –20)	32 (34.4)	19 (28.3)
Normal (20-25.0)	28 (30.1)	32 (48)
Obese grade I (25.0 – 30.0)	5 (5.3)	6(9)
Obese grade II (Beyond 30)	-	-
VO₂		
Poor (up to 15.0)	-	-
Low average (16-25)	9(9.6)	4(6)
High average (26-30)	13(14)	39 (58)
Good (31-40)	49 (53)	17(25)
Very good (41-45)	10 (11)	5 (7.4)
Excellent (beyond 45)	12(13)	2(2.9)

Figures in the parenthesis indicates percentage

Body mass index (BMI):

BMI of the selected women ranged between 19.05 to 20.50, which was significantly higher for upper age group women. As per the grading order by the body mass index scores (Table 2), majority of the subjects fell in the category of CED grade I which was mild energy deficiency group. Percentage of subjects under normal category was highest (48%) from older age group women. There was no significant correlation found between age of the subjects and body mass index. Body mass index was not significantly correlated with physical fitness index of the subjects (Table 3).

Table 3 : Correlation co-efficient between the selected physiological parameters while performing the physical fitness test

Parameters	Age group			
	I (25 – 35 years)		II (35 – 45 years)	
	VO ₂	PFI	VO ₂	PFI
Age	0.21*	0.048	-0.49*	-0.038
BMI	-0.17	-0.24	0.00071	-0.15

Aerobic capacity (VO₂ml.kg⁻¹.min):

VO₂ calculated for 25-35 years and 35-45 years age group was 36.87 and 31.18 (ml.kg⁻¹.min), respectively. There was significant difference found in the values of VO₂ when Z test was applied. Younger age group women had higher aerobic capacity than the older age group women. As per the VO₂ classification, maximum women (58%) from the age group II belonged to high average category where as 53 per cent of the women from age group I belonged to good category of aerobic capacity. Percentages of younger women belonging to the category of very good and excellent were 11 and 13 per cent, respectively. Correlation co-efficient test between age and aerobic capacity showed negative significant correlation. As the age of farm women increased, VO₂ capacity was found to be decreased (Table 3).

Conclusion:

Majority of the selected farm women were slender with mild energy deficiency and belonged to high average category of physical fitness and aerobic capacity. Though all the selected parameters health status of farm women was found average which need to be improved.

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