

Assessment of Physical Fitness Level of Corporate Employees

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ABSTRACT

Lack of physical activity is one of the leading risk factors for death worldwide and also a potent key risk factor for non-communicable diseases (NCDs) such as cardiovascular diseases, hypertension and diabetes. In most of the cases it is found that the nature of work for office employees do not require high physical efforts rather consists of sitting in the workplace for a longer period but the study on employees in corporates are not adequate. Thus, the aim of the study was to assess physical fitness of office employees. A total 93 (26 female and 67 male) office employees were selected from a corporate office in Nehrunagar, Ahmedabad for the said study. Low or poor physical fitness was observed in about 45% of employees, 30% of employees had moderate physical fitness and 25% of employees had good physical fitness. The overall result revealed that employees who were doing physical activity, their physical fitness was better than the employees who were not doing any kind of physical activity. A Diet survey was also taken by 24 hours recall. Diet survey revealed that the consumption of protein was lower than the RDA and consumption of fat was double in amount than RDA. The anthropometric measurement revealed that about 35% of female and 45% of male employees were ranging in the overweight category.

Key Words : Non-communicable, Physical activity, Anthropometric measurements

INTRODUCTION

In today's era people are having sedentary life style clubbed with acute pressure in corporate sector. Long working hours and at a stretch working with the sitting posture makes a person physically inactive and this leads to a lot of physical ailments and body deterioration. Less physical activity and sedentary life style is the main cause of non-communicable diseases like obesity, cardio vascular problem, hyper tension, diabetes and many more such types of physical problems.

Physical activity is any bodily movement produced by the skeletal muscles that uses energy. This includes sports, exercise and other activities such as playing, walking, doing household chores or gardening. Doing some physical activity is better than doing nothing. Inactive people should start with small amounts of physical activity and gradually increase duration, frequency and intensity over a span of time. Inactive adults, older adults and those

with disease limitations will have added health benefits when they become more active. Physical inactivity is now identified as the fourth leading risk factor for global mortality. Physical inactivity levels are rising in many countries with major implications for the prevalence of non-communicable diseases (NCDs) and the general health of the population worldwide. According to current WHO report, non-communicable diseases (NCDs) represent 43% of disease burden globally and this figure is expected to rise to be responsible for 60% of the disease burden and 73% of all deaths by 2020. In 1990, nearly 40% of deaths were attributable to NCDs and it has been projected that this will increase to 66% in 2020 (IDF, 2010). Recommended physical activity guidelines for adults should be 60 min every day. It should include at least 30 min of moderate-intensity aerobic activity, 15 min of work-related activity and 15 min of muscle strengthening exercises. Gradual increase in physical activity is recommended for inactive people (Mishra *et*

al., 2009).

The complex nature of physical fitness can be best understood in terms of its components such as cardiovascular endurance, strength, flexibility, speed, agility and muscular endurance. In addition to these components of physical fitness there are many other factors which contribute to physical fitness including heredity, living standard, nutrition, hygienic conditions, environmental and climate factors etc. (James *et al.*, 1992). Low levels of physical activity and cardio-respiratory fitness are both associated with higher risk of all cause and disease specific mortality (Kamath *et al.*, 1999).

A sedentary lifestyle is a type of lifestyle with no or irregular physical activity. It eliminates from the everyday work all these forms based on physical activity and simple physical effort, leaving mainly monotonous activities that unevenly load the individual parts and systems of the human body. This phenomenon pertains mainly to the office workers e.g. bank officials or people employed in civil/local administration. Positive outcomes of moderate-intensity physical activity include an increase in high-density lipoprotein cholesterol, reduction of blood pressure, long-term maintenance of weight loss and decrease in the risk of death from lifestyle-related diseases (Warburton *et al.*, 2006).

Dietary factors and physical activity patterns strongly influence overweight and obesity and can be considered to be the major modifiable factors. Obese subjects spent less energy in their daily lives and all the subjects had sedentary life-style. The increasing proportion of fat and energy dense foods in the diet, together with reduction in the level of physical activity and rise in the sedentary behaviours are thought to be major contributing factors to the rise in the average body weight and BMI.

Medical research has demonstrated the effectiveness of moderate levels of physical activity and healthy diet in the promotion of long-term good health. Their significant benefits are to assist in weight management, relieve stress and tension, help maintain suppleness and flexibility, improve cardiovascular fitness, increase endurance and boost energy, promote mental relaxation, delay the onset of osteoporosis, and promote a feeling of wellbeing.

METHODOLOGY

The study was conducted in a corporate office

located at Nehrunagar area of Ahmedabad Gujarat. Total 93 office employees (26 female and 67 male) were randomly selected for the study. The age intervals of respondents were between 20 – 50 years. Close ended questionnaire were developed in order to collect information regarding personal particulars and physical activity of respondents. Height and weight were measured using standard techniques and BMI was also calculated. Fat percentage of the body was taken by using skinfold calliper. The order and location of skinfold measurement were for Males- chest, abdomen and thigh and for females- tricep, suprailiac and thigh. The procedure of skinfold measurement was selected at a private and comfortable area, using the right side of the body and body fat percentage was determined by using the chart based on sex and age. The physical fitness of the respondents were assessed using three minutes step-up test (cardio-respiratory endurance), curl up test (muscular endurance) and sit and reach test (flexibility). Dietary survey of the sample was conducted by using 24 hours dietary recall method for 3 days using standardized cup sets and by food frequency method to assess their food and nutrient intake.

After collecting data, it is necessary to analyze it with help of statistics to arrive at proper and adequate conclusion. Following statistical measures were used to analyze the data.

Frequency, mean, standard deviation was calculated for the parameters like height, weight, BMI, nutrient intake, Standard deviation was calculated for in the present study and by the T test the significance level was calculated.

RESULTS AND DISCUSSION

The results obtained from the analysis of the data of present investigation were organized and presented as under:

Table 1 shows that total 53.13 per cent of male, 65.38 per cent of female were of 20-30 year age, 37.7 per cent male, 30.8 per cent female were of 31-40 years of age and 9.4 per cent male 3.84 per cent female were of 41-50 years of age whereas data regarding their educational qualification revealed that most of the respondents (84.37 % male, 61.53 % female) were educated till graduation level and 15.62 per cent male, 38.56 per cent female were educated till post-graduation level. 76.5 per cent males and 76.92 per cent females were from joint family and only 23.44 per cent male, 29.07 per cent females were from the nuclear family.

Most of the respondents (76.5 % male, 92.31 % female) were vegetarian and 10.93 per cent male, 7.69 per cent female were non vegetarian.

Analysis of sleeping pattern revealed that most of the respondents (85.9 % males, 92.31 % females) sleep 6-7 hours, only 4.69 per cent males, 7.69 per cent females sleep more than 8 hours daily, no female sleep less than 6 hours where as 9.37 per cent males sleep less than 6 hours daily. Information regarding health problems revealed that 18.57 per cent males, 7.69 per cent females had hypertension problem, 6.79 per cent females had diabetes problem whereas no male had diabetes problem. Most of the respondents (81.25 % males, 84.61 % females) were not having any health problem.

0.8±0.08).

Table 2 : Anthropometric indicators

Anthropometric Measurement	Mean±S.D.	
	Female	Male
Height	5.1±0.5	5.6±0.41
Weight	61.9±15.3	68.9±12.6
BMI	24.7±5.2	24.2±3.9
Waist hip ratio	0.8±0.08	0.9±0.07

Fig. 1 revealed respondent’s classification according to their BMI. It showed that 3.8% of females and 10.6% of males were underweight, 57.7% of females and 43.9% of males were normal while 38.5% of females and 45.5% of male came into overweight category.

Table 1 : Demographic distribution of respondents (N=92)		
	Male (n=67) Percentage	Female (n=26) Percentage
Age group		
20-30	53.13	65.38
31-40	37.5	30.8
41-50	9.4	3.84
Education		
Graduate	84.37	61.53
Post- Graduate	15.62	38.46
Type of family		
Joint	76.5	76.92
Nuclear	23.44	29.07
Eating habits		
Vegetarian	76.56	92.31
Non-vegetarian	10.93	7.69
Sleeping hours		
Less than 6 h	9.37	-
6-8 h	85.9	92.31
More than 8h	4.69	7.69
Health problem		
Diabetes	-	7.69
Hypertension	18.75	7.69
No	81.25	84.61

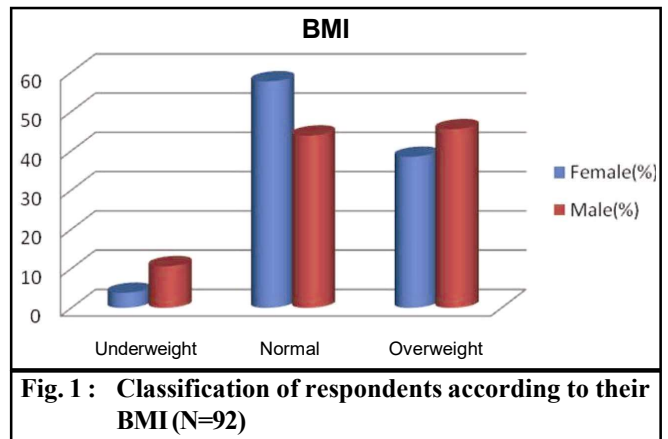


Fig. 1 : Classification of respondents according to their BMI (N=92)

Table 2 presents data pertaining to the anthropometric measurement of the subjects. The information gathered from each respondents on their height, weight, BMI and waist hip ratio. Study revealed that mean ± SD height of all the respondents were (male 5.6±0.41, female 5.1±0.5), weight mean ± SD were (male 68.9±12.6, female 61.9±15.3), mean ± SD BMI were (male 24.2±3.9, female 24.7±5.2) whereas the mean ± SD of waist hip ratio were (male 0.9±0.07, female

Fig. 2 showed Waist / Hip Ratio of the respondent Waist hip ratio – The mean of females and males were 0.8±0.08 and 0.9±0.07. It showed 84.8% of males had below 1 w/h ratio so these employees were considered healthy and 15% of male had more than 1 w/h so they were fallen into unhealthy category ratio while 69% of females fallen into healthy category as their w/h were below 0.8 ratio and 30.8% of females fallen into unhealthy category as their w/h were more than 0.8 w/h ratio.

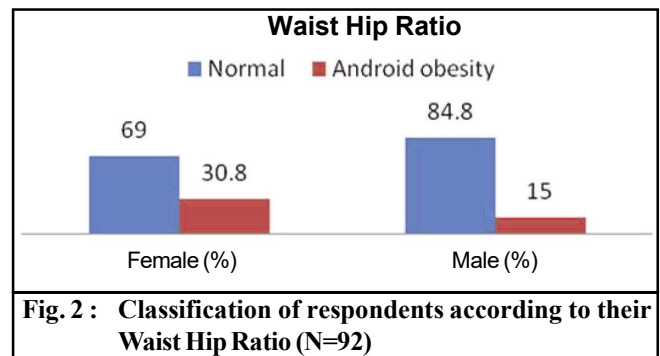


Fig. 2 : Classification of respondents according to their Waist Hip Ratio (N=92)

Fitness information:

Health related physical fitness includes cardio-respiratory, muscular endurance like push-ups and sit-ups, flexibility and fat percentage. All parameters were measured by standard techniques to assess the fitness of office employees and the findings are given below.

Table 3 revealed the mean \pm S.D. value of fat percentage and flexibility of females were more (28.8 \pm 6.2, 27.8 \pm 9.6) than male (25.4 \pm 5.9, 22.9 \pm 7.6) while Mean \pm S.D value of cardiorespiratory index sit-ups, Push-ups of female was less (41.6 \pm 7.4, 12 \pm 6.3) than males (55.3 \pm 5.6, 22.9 \pm 7.6, 16.1 \pm 7.5).

Table 3 : Mean of all fitness components		
Parameters	Female (Mean \pm S.D)	Male (Mean \pm S.D)
Fat %	28.8 \pm 6.2	25.4 \pm 5.9
Cardiorespiratory (Vo2 max)	41.6 \pm 7.4	55.3 \pm 5.6
Flexibility	27.8 \pm 9.6	22.9 \pm 7.6
Sit-Up	12 \pm 6.3	16.1 \pm 7.5
Push-UP	7 \pm 7.4	14 \pm 9.99

Fig. 3 indicated that 61.2% of males and 42.3% of females respondent were having high fat percentage, 25% of males and 27% of females were having more than normal fat percentage while 13% of males and 30% of females were having normal fat percentage.

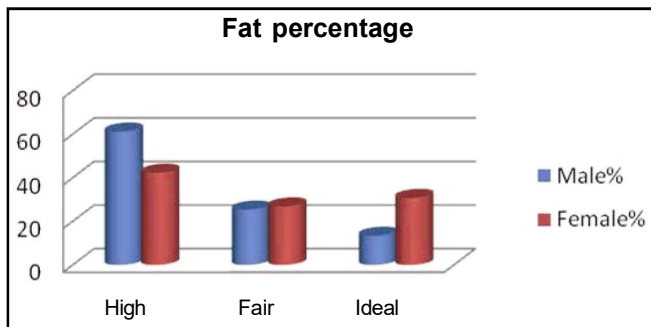


Fig. 3 : Classification of respondents according to fat percentage (N=92)

The result of Fig. 4 revealed that most of the male and female subjects were having normal cardio respiratory endurance fitness.

The results of Fig. 5 showed that 86% males had poor muscular endurance 6% males had fair muscular endurance, and 4% had fit and excellent muscular endurance while 84% females had poor muscular endurance, 15.4% females had fair muscular endurance,

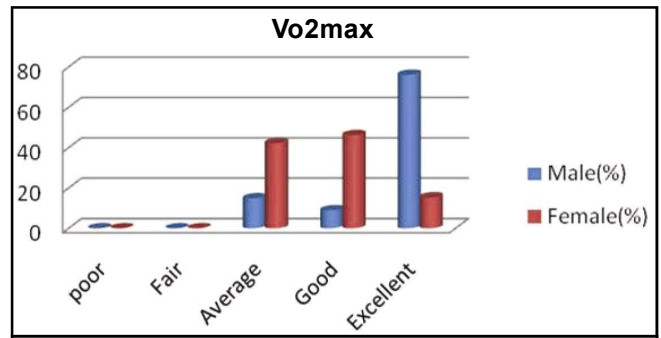


Fig. 4 : Classification of respondents according to Cardiorespiratory endurance (N=92)

and none of the female subjects had fit and excellent muscular endurance.

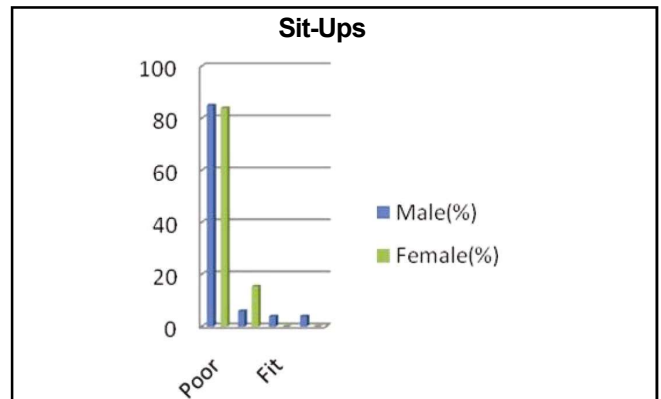


Fig. 5 : Classification of respondents according to Muscular endurance (N=92)

Push-Ups :

Fig. 6 showed that 50.4%, 26.8%, 1.9% and 8.9% of male while 84.6%, 7.7%, 3.8% and 3.8% of female subjects were having poor, fair and excellent muscular endurance, respectively.

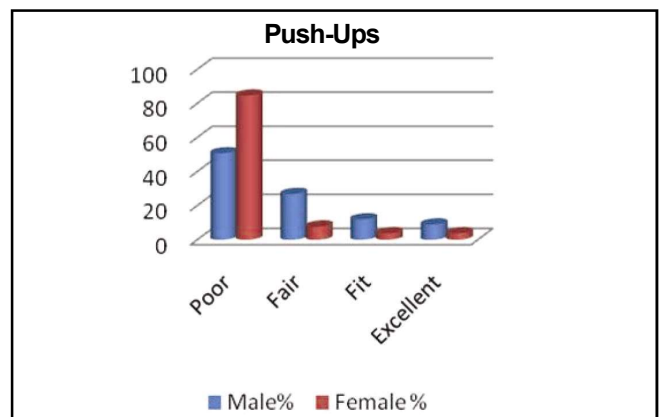


Fig. 6 : Classification of respondents according to Muscular endurance (N=92)

The results showed in Fig. 6 that 50.4%, 26.8%, 1.9% and 8.9% of males while 84.6%, 7.7%, 3.8% and 3.8% of females subject were having poor, fair and excellent muscular endurance, respectively.

Fig. 7 revealed flexibility of male and female, 32.8% of males had poor flexibility, 62.7% males had fair flexibility and 2.9% males had fallen into fit flexibility category while none of the male had excellent flexibility. 26.9% females fallen into poor flexibility category, 57.7% fallen into fair flexibility category while none of the females fallen into fit and excellent category.

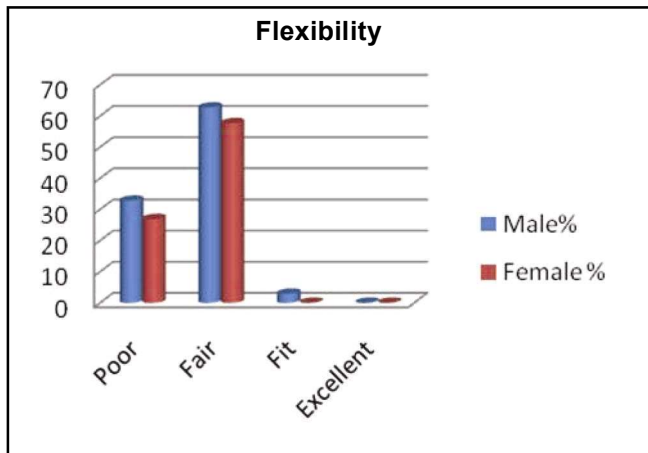


Fig. 7 : Classification of respondents according flexibility (N=92)

Table 4 showed physical activity patterns of employees. The result revealed that 51.6% of males and 23% of females were doing physical activity while 48.4% of males and 76.9% of females were not doing any type of physical activity.

Physical activity	Female (%)	Male (%)
Yes	23.07	51.56
No	76.92	48.44

Table 5 showed what type of physical activities office employees were doing for their fitness. The results revealed that 72.7% of males and 66.7% of females prefer walking, 3% of males and 16.7% of females prefer jogging, 6% of males prefer running, 3% of males were playing sports activity, 15.2% of males and 16.7% of females prefer gym while none of the respondents doing swimming and cycling.

Type of activity	Male (%)	Female (%)
Walking	72.7	66.7
Jogging	3.03	16.7
Running	6.06	0
Cycling	0	0
Swimming	0	0
Sport activity	3.03	0
Gym	15.15	16.7

Table 6 revealed that subjects who were doing physical activity their Fitness level was better than the subjects who were not engaged in any type of physical activity but there was no significant difference found on the fitness level of all the male subjects who were doing physical activity / were not doing physical activity while there were a significant difference found in the cardiorespiratory endurance and strength level of female subjects who were engaged in physical activity / were not engaged in physical activity. Table 6 also revealed that there were no significant difference found in the fat percentage and flexibility of female subjects who were engaged in physical activity/not engaged in physical activity. Overall the study revealed that physical activity is not the only parameter which affects the fitness level of subjects but other parameters like dietary intake, type of physical activity, sleeping patterns patterns and overall life style of an individual also play crucial role in the fitness level of individual.

	Fat %	P Value	VO2 Max	P Value	Flexibility	P Value	Sit-Ups	P Value	Push-Ups	P Value
Male										
Not doing activity	27.87±3.4	0.21	54.02±6.9	0.32	22.77±6.9	0.39	13.88±6.0	0.22	12.61±6.5	0.34
Doing activity	25.94±5.6		51.75±7.4		24.85±8.2		16.55±7.5		15.11±9.3	
Female										
Not doing activity	28.66±4.4	0.25	46.71±9.8	0.05*	25.16±7.5	0.69	11.33±5.3	0.004*	8.3±6.5	0.15
Doing activity	25.25±5.4		58.4±4.3		23.25±8.6		21.25±1.6		14.75±5.9	

Indicate significance of value at P=0.05

Fig. 8 showed that fitness level of all the employees having about 43% of poor fitness level, 30% having moderate physical fitness while 25% having Good physical fitness.

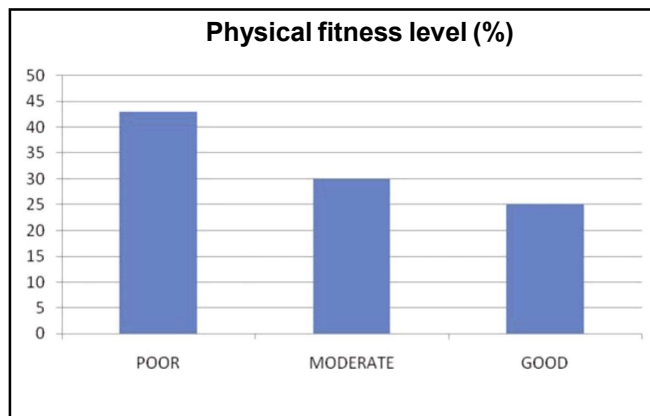


Fig. 8 : Over all Fitness level of corporate employees (N=92)

Conclusion :

The overall result revealed that 45% of employees had poor fitness level, 30% of employees having moderate physical fitness and only 25% of employees having good physical fitness level.

The result also revealed that employees who were not doing any physical activity their fitness level were very poor than the employees who were doing some physical activity. The dietary information collected by the 24 hours recall method .the results shows that the protein of all subjects were less than RDA requirement and the fat intake were double in amount as per the RDA requirement

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