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A comparative study of fitness variables among age groups of different professionals

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Abstract
The study was cited as to expand the acceptance and for better inferences a total 1500 subjects were selected from five professional groups namely Doctors, Lawyers, Bureaucrats, IT Professionals and Engineers from three age group 25-35yrs, 36-45ys and 46-55yrs on Fitness Status. Fitness status was assessed for cardiovascular fitness, Body Mass Index and Fat Percentage. Data on fitness status obtained on BMI, 12 Minute Run and Walk and Fat Percentage were subjected to Analysis of Variance. The two way analysis of variance on three fitness items namely 12 Minute Run and Walk, Body Mass Index and Fat Percentage significance of variance was established for all the three age groups. Significant F Value of 9.668 and 4.069 were obtained for 12 Minute Run and Walk performance signifying in cardio vascular endurance the three age groups significantly different with each other. Further in Body Mass Index comparison also similar variational status was established with F Value of 11.798 and 12.242, it was observed in Body Mass Index comparison that in terms of age groups are significantly different. Fat Percentage analysis also revealed with F value of 20.414 and 15.972 that different significantly in terms of age groups.

Keywords: Fitness, professionals

Introduction
The fundamental right to health articulated by the World Health Organization (WHO) in 1946 remains integral to development today. This right is strongly reflected in the Millennium Development Goals (MDGs), the guiding international development framework adopted by the United Nations (UN) in 2000, and the Human Development Index used to measure the progress of all nations against universal human development goals (sport and health preventing disease and promoting health, 2007).

One of the primary goals of an exercise program is to develop and maintain cardio respiratory fitness. Many people engage in aerobic activities to improve their health status, reduce disease risk, modify body composition and improve all around physical fitness. It is important to select a mode of exercise that uses the large muscles of the body in a continuous, rhythmical fashion, and that is relatively easy to maintain at a consistent intensity. It is interesting to note that not all modes of exercise are comparable in terms of energy (caloric) expenditure. However, several factors, in addition to energy expenditure, should be considered when selecting an exercise mode (Len Kravitz, 2014).

The connections between regular exercise / physical activity and health were not always as obvious as they are today. In fact, as recently as the early 1980s medical and public attitudes towards exercise were quite different. To run 5 min, swim 1 min in the ocean, or cycle 50 min along the coast and to do these several times each week were viewed to be characteristics of abnormal behavior. After all, the objectives of 'modern society' were to make life easier to live, not more laborious. Physicians were not demanding that their patients exercise more to combat hypertension, excess body fat, or heart disease, and there was no media support to promote exercise and an active lifestyle. However, thanks to the continued research efforts of physical educators and exercise physiologists, and certain more enlightened physicians, the connections between an active lifestyle and overall health became more recognized. During the two and half decades from 1980 to the present, the evidence that exercise can not only prevent disease, but also reverse many disease processes has accumulated to such a degree that now almost all medical organizations have published statements on how important exercise is

in the prevention and treatment of their diseases of interest.

Because physical inactivity is a primary risk factor driving the global increase in chronic disease, sport can play a critical role in slowing the spread of chronic diseases, reducing their social and economic burden, and saving lives. While physical activity includes a broader range of activities than sport alone (people can be physically active at work or engaged in domestic tasks at home), direct participation in sport is one of the most enjoyable, and therefore powerful, means of motivating and mobilizing people to become physically active. In addition to enhancing overall physical fitness, regular physical activity, active play and sports can have a positive impact on other major health risk factors, such as high blood pressure, high cholesterol, obesity, tobacco use and stress (sport and health preventing disease and promoting health, 2007). A powerful social connector, sport can bring people together, expand and strengthen social ties and networks, link people to resources and provide them with a sense of belonging. These social relationships are a fundamental determinant of health but are often lacking or people who are marginalized by poverty, disease, discrimination or conflict. Sedentary lifestyles double the risk of heart disease. In terms of heart disease risk, physical inactivity is equivalent to smoking a pack of cigarettes each day. More people are at risk for developing heart disease because of physical inactivity, than are all people for smoking, high blood pressure, and high cholesterol (combined). Physical inactivity reduces your life span. Physical inactivity is associated with a higher incidence of chronic diseases such as diabetes, arthritis, osteoporosis and obesity. Physical activity declines dramatically with age and during adolescent years. The first step in developing your personal plan for change is to figure out how you are feeling about changing your habits. The stage of change diagram describes four stages that people may go through when changing a health behavior. Think about where you are in terms of eating better and/or moving more. What stage seems to best match where you are right now? Making the leap from thinking about change to taking action can be hard. Asking yourself about the pros (benefits) and cons (things that get in the way) of changing your habits may be helpful. Look at the lists below. Check off the items that you believe are true for you. Feel free to add others that you think are important. (Changing Your Habits: Steps to Better Health, 2014). If jogging, swimming, cycling, aerobic dancing, and other strenuous activities aren't for you, *try* walking. Regular walking contributes many of the health benefits of other activities. And walking has advantages that other activities do not: other than appropriate shoes, no special clothing or equipment is required, and walking can be fit easily into a busy schedule. Walking contributes the most to health when it is done regularly (about four times a week) for a minimum of 20 minutes each day. How-strenuous the walk should be depends on the desires and physical abilities of the walker. Most of the benefits can be derived by walking between two and four miles per hour. Aerobic capacity can be increased by walking briskly enough to increase the heart rate.

Statement of the Problem

Physical fitness is also being now a day's seen in the context of wellness or health related fitness. This approach essentially takes into account the pattern of life style on follows rigorously due to professional demand, and it is growingly run in every profession. The elite health club members are normally various professionals belonging to high income group of society. Because of their life style demand of profession, availability of time for recreational exercise, these group of people though aware about health hazards develops interrupted exercise schedule and hence benefits of exercise or health club visit are not derived.

Objectives of the Study

1. To Investigate Fitness Status of different age group among professionals such as Doctors, Bureaucrats, IT Professionals, Engineers and Lawyers.
2. To investigate about Fitness Status among all professionals namely Doctors, Bureaucrats, IT Professionals, Engineers and Lawyers visiting elite health clubs.

Significance of the Study

This study was conceptualized with an idea to investigate Fitness status of different age group professionals visiting health club members.

1. Findings of the study may provide a premonition to the people about the consequences of fitness status towards personal and professional developments.
2. Proper circulation of the findings in different age groups may prompt them to be physically active, resulting in better output.
3. Findings of this research study will also add to the body of knowledge and literatures of Health, Fitness and Physical Education.

Methodology

The subjects from various professions were from the age group 25-35yr, 36-45yr and 46-55yr. Adapting purposive sampling method 100 subjects for each professional groups in each age group were selected from Elemention Health & Sport, Fitness Anthem, Ozone and Celebrity Fitness, thus a total of 1500 subjects were selected. The Research scholar personally contacted the Elite health clubs chains that are available in the Delhi, Gurgaon and Chandigarh. However, only Elemention Health & Sport, Fitness Anthem, Ozone and Celebrity Fitness chain of health club authorities consented to permit and provide access. The details of selected subjects are follows:-

Professionals	Age Groups		
	25 to 35	36 to 45	46 to 55
Bureaucrats	100	100	100
I.T. Professionals	100	100	100
Engineers	100	100	100
Doctors	100	100	100
Lawyers	100	100	100

Selection of the Variable

In this study, care was taken to select the variables for fitness status which are not only relevant but also closely related to the purpose of this study.

Variables	Tests	Criteria
Fitness Status		
a) Body Mass Index	Weight/Height^2	Percentage
b) Cardio Respiratory Endurance	12 Min. treadmill run and walk	Distance in km.
c) Fat Percentage	Bioelectrical Impedance Analysis	Percentage

Statistical Techniques

Parametric: In Parametric section fitness status was analyzed by using both descriptive and inferential statistics. Descriptive statistics was used to highlight the status of fitness status of different groups. In Inferential statistics two way analysis was used to compare health status and fitness status among different age groups and professionals. The level of significance of the entire test was tested at 0.05 levels.

Findings- The statistical analysis of data was done in accordance with the purpose of the study.

Two way Analysis of Data

Table 1: Two way ANOVA table for the data on BMI scores Dependant Variable: Body Mass Index (BMI)

Source	Type III Sum of Squares	Df	Mean Square	F
Corrected Model	3670.092	14	262.149	15.495*
Intercept	1438643.217	1	1438643.217	85036.142*
Age Group	399.195	2	199.597	11.798*
Profession	1614.067	4	403.517	23.851*
Age Group * Profession	1656.831	8	207.104	12.242*
Error	251123.261	1485	16.918	
Total	1467436.570	1500		
Corrected Total	28793.353	1499		

*significant at 0.05 level of significance

In Table 1 analysis of variance on Body Mass Index, it is clearly evident that the three age group are significantly different on Body Mass Index. Since calculated value obtained are 11.798, 23.851and 12.242 are greater than tabulated value 3.00, 2.37 and 1.94.

Table 2: Post Hoc Mean Comparison on Body Mass Index (BMI) Among Different Professions of 25-35 yrs Age Group

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
29.04	28.43				0.61	0.26014	0.53
29.04		30.46			1.42*	0.26014	
29.04			32.64		3.6*	0.26014	
29.04				32.13	3.09*	0.26014	
	28.43	30.46			2.03*	0.26014	
	28.43		32.64		4.21*	0.26014	
	28.43			32.13	3.7*	0.26014	
		30.46	32.64		2.18*	0.26014	
		30.46		32.13	1.67*	0.26014	
			32.64	32.13	0.51	0.26014	

*significant at 0.05 level of significance

The statistical finding on BMI implies that Engineers are best with lowest BMI value followed by Doctors, Lawyers, IT Professional and Bureaucrats, in 25-35 yr age group of different profession.

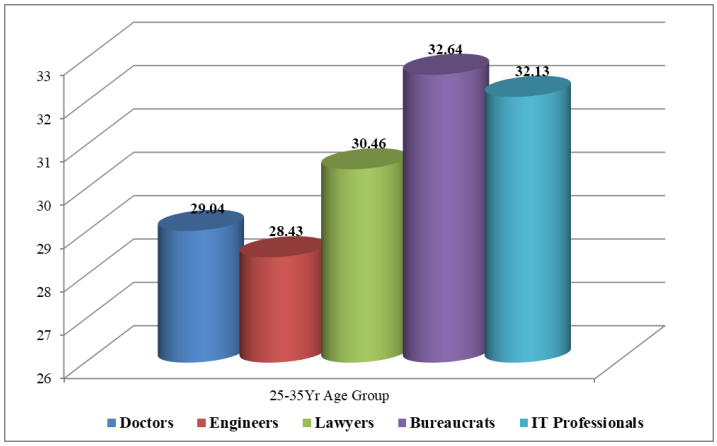

Fig 1: Post Hoc Mean Comparison on Body Mass Index (BMI) Among Different Professions of 25-35 yrs Age Group

Table 3: Post Hoc Mean Comparison on Body Mass Index (BMI) Among Different Professionals of 36-45 yrs Age Group

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
30.33	29.40				0.93	0.26014	0.53
30.33		29.89			0.44	0.26014	
30.33			30.46		0.13	0.26014	
30.33				33.27	0.06	0.26014	
	29.40	29.89			0.49	0.26014	
	29.40		30.46		1.06*	0.26014	
	29.40			33.27	3.87*	0.26014	
		29.89	30.46		0.57	0.26014	
		29.89		33.27	3.38*	0.26014	
			30.46	33.27	2.81*	0.26014	

*significant at 0.05 level of significance

The statistical finding on BMI implies that Engineers are best with lowest BMI value followed by Lawyers, Doctors, Bureaucrats and IT Professional in 36-45 yr age group of different profession.

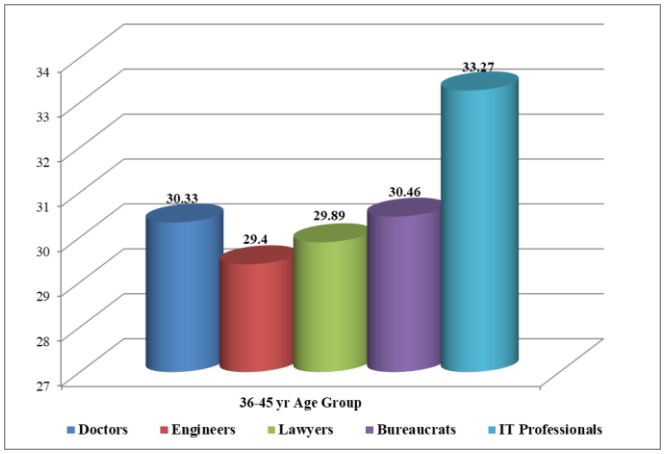

Fig 2: Post Hoc Mean Comparison on Body Mass Index (BMI) Among Different Professionals of 36-45 yrs Age Group

Table 4: Post Hoc Mean Comparison on Body Mass Index (BMI) among different Professional of 46-55yr

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
32.89	30.64				2.25*	0.26014	0.53
32.89		32.68			0.21	0.26014	
32.89			29.42		3.47*	0.26014	
32.89				32.82	0.07	0.26014	
	30.64	32.68			2.04*	0.26014	
	30.64		29.42		1.22*	0.26014	
	30.64			32.82	2.18*	0.26014	
		32.68	29.42		3.26*	0.26014	
		32.68		32.82	0.14	0.26014	
			29.42	32.82	3.4*	0.26014	

*significant at 0.05 level of significance

The statistical finding on BMI implies that Bureaucrats are best with lowest BMI value followed by Engineers, Lawyers, IT Professional and Doctors in 46-55 yrs age group of different profession.

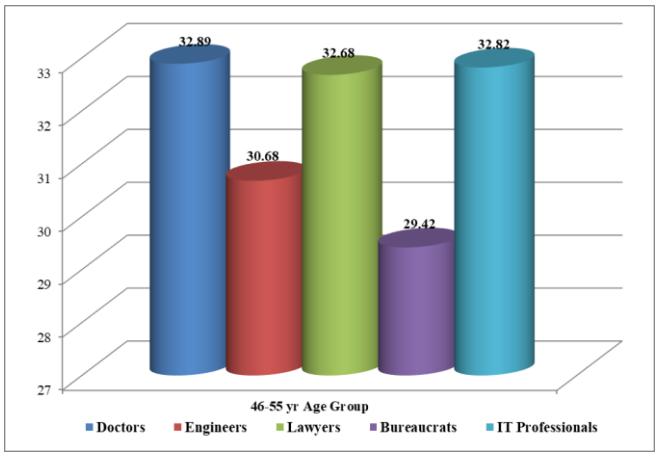

Fig 3: Post Hoc Mean Comparison on Body Mass Index (BMI) among different Professional of 46-55yrs

Table 5: Post Hoc Mean Comparison on 12 Minute Run and Walk Among Different Professional of 25-35 yr

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
2288.69	2671.98				383.29*	0.26014	70.8
2288.69		2565.56			276.87*	0.26014	
2288.69			2273.26		15.43	0.26014	
2288.69				2587.33	298.64*	0.26014	
	2671.98	2565.56			106.42*	0.26014	
	2671.98		2273.26		398.72*	0.26014	
	2671.98			2587.33	84.65*	0.26014	
		2565.56	2273.26		292.23*	0.26014	
		2565.56		2587.33	21.77	0.26014	
			2273.26	2587.33	314.07*	0.26014	

*significant at 0.05 level of significance

The statistical finding on 12 minute run and walk performance implies that Engineers are best with highest performance score followed by IT Professional, Lawyers, Doctors, and Bureaucrats, in 25-35 yr age group of different profession.

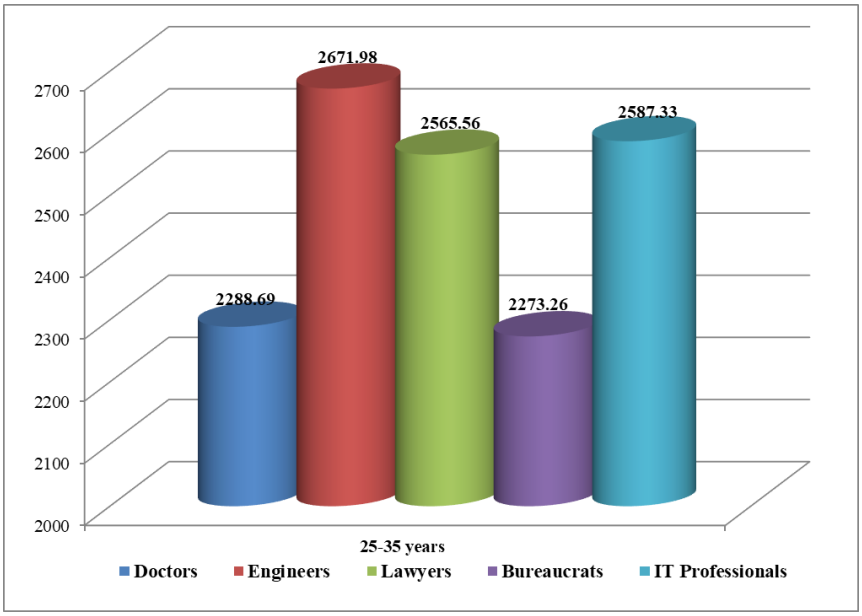

Fig 4: Post Hoc Mean Comparison on 12 Minute Run and Walk among Different Professional of 25-35 yr

Table 6: Post Hoc Mean Comparison on 12 Minute Run and Walk Among Different Professional of 36-45 yr

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
2494.59	2563.90				69.31	0.26014	70.8
2494.59		2448.17			464.42*	0.26014	
2494.59			2390.38		104.21*	0.26014	
2494.59				2447.64	46.95	0.26014	
	2563.90	2448.17			115.73*	0.26014	
	2563.90		2390.38		173.52*	0.26014	
	2563.90			2447.64	116.26*	0.26014	
		2448.17	2390.38		57.79	0.26014	
		2448.17		2447.64	0.53	0.26014	
			2390.38	2447.64	57.26	0.26014	

*significant at 0.05 level of significance

The statistical finding on 12 minute run and walk performance implies that Engineers are best with highest 12 minute run and walk performance followed by, Doctors, Lawyer, IT Professional and Bureaucrats in 36-45 yr age group of different profession.

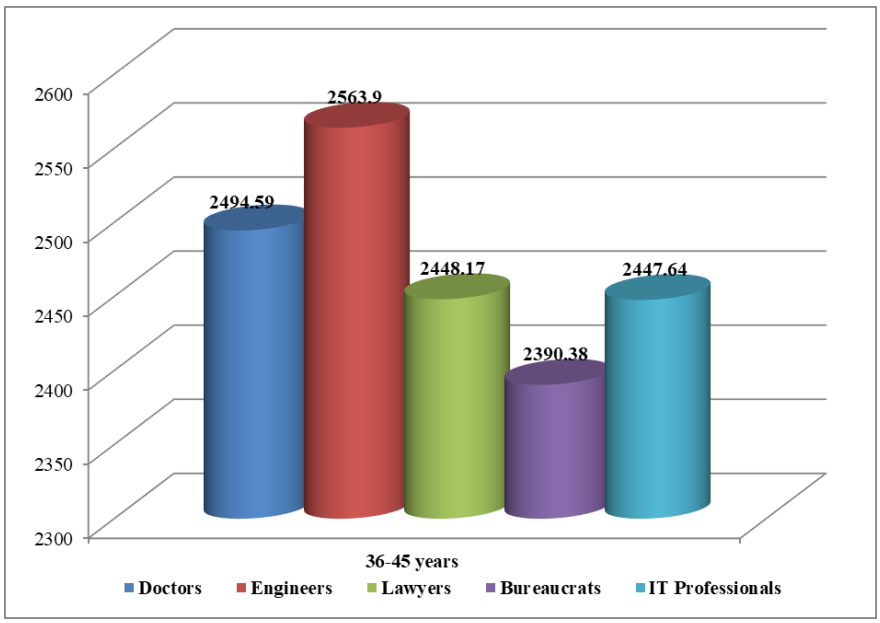

Fig 5: Post Hoc Mean Comparison on 12 Minute Run and Walk among Different Professional of 36-45 yr

Table 7: Post Hoc Mean Comparison on 12 Minute Run and Walk among Different Professional of 46-55 yr

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
2140.04	2490.90				350.86*	0.26014	70.8
2140.04		2522.14			382.1*	0.26014	
2140.04			2316.64		176.6*	0.26014	
2140.04				2233.01	92.97*	0.26014	
	2490.90	2522.14			31.24	0.26014	
	2490.90		2316.64		174.26*	0.26014	
	2490.90			2233.01	257.89*	0.26014	
		2522.14	2316.64		205.5*	0.26014	
		2522.14		2231.01	291.13*	0.26014	
			2316.64	2231.01	85.63*	0.26014	

*significant at 0.05 level of significance

The statistical finding on 12 minute run and walk performance implies that Lawyers are best with highest 12 minute run and walk performance followed by Engineers, Bureaucrats, IT Professional and Doctors in 46-55 yr age group of different professions.

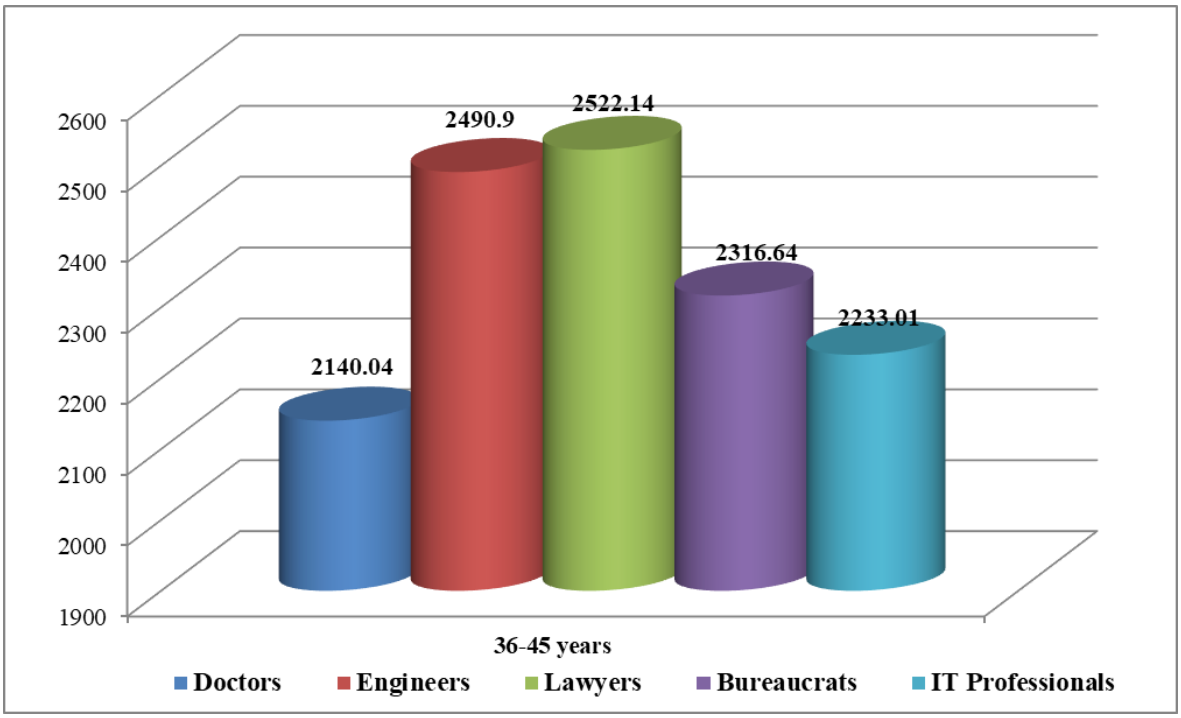

Fig 6: Post Hoc Mean Comparison on 12 Minute Run and Walk among Different Professional of 46-55 yr

Table 8: Post Hoc Mean Comparison on Fat Percentage between 25-35 year Age Group (All Professional Combined)

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
24.26	24.51				0.25	0.36745	0.74
24.26		24.03			0.23	0.36745	
24.26			28.25		3.99*	0.36745	
24.26				25.46	1.2*	0.36745	
	24.51	24.03			0.48	0.36745	
	24.51		28.25		3.74*	0.36745	
	24.51			25.46	0.95*	0.36745	
		24.03	28.25		4.22*	0.36745	
		24.03		25.46	1.43*	0.36745	
			28.25	25.46	2.79*	0.36745	

*significant at 0.05 level of significance

The statistical finding on fat percentage implies that Lawyers are best with lowest fat percentage score followed by Doctors, Engineers, IT Professional and Bureaucrats in 25-35 yr age group of different profession.

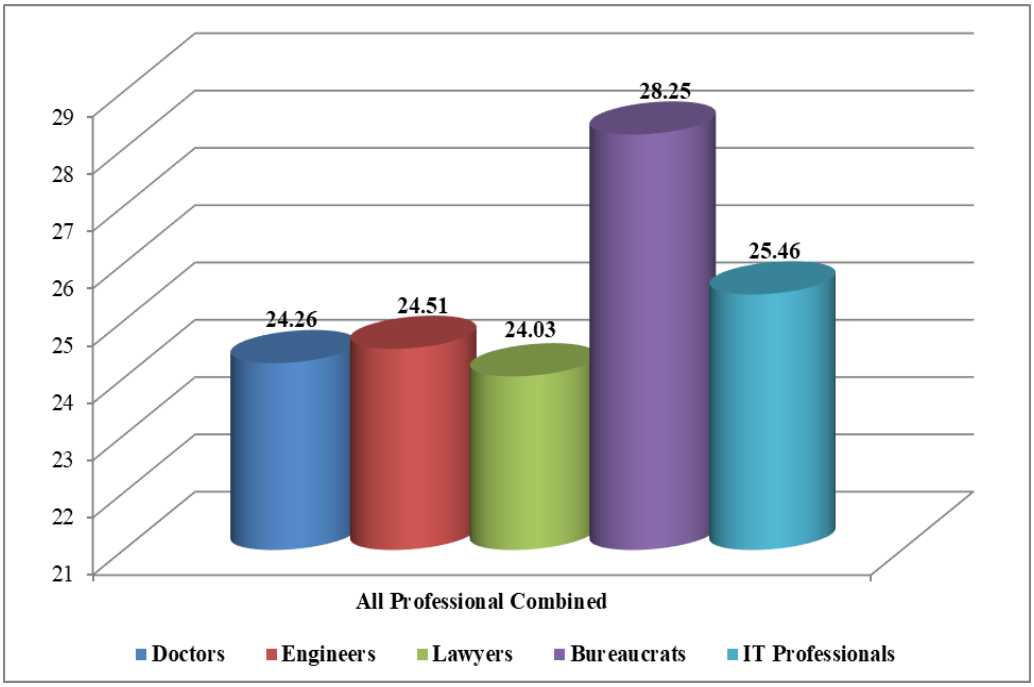

Fig 7: Post Hoc Mean Comparison on Fat Percentage between 25-35 year Age Group (All Professional Combined)

Table 9: Post Hoc Mean Comparison on Fat Percentage between 36-45 year Age Group (All Professional Combined)

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
25.29	24.88				0.41	0.36745	0.74
25.29		26.90			1.61*	0.36745	
25.29			25.89		0.6	0.36745	
25.29				29.24	3.95*	0.36745	
	24.88	26.90			2.02*	0.36745	
	24.88		25.89		1.01*	0.36745	
	24.88			29.24	4.36*	0.36745	
		26.90	25.89		1.01*	0.36745	
		26.90		29.24	2.34*	0.36745	
			25.89	29.24	3.35*	0.36745	

*significant at 0.05 level of significance

The statistical finding on fat percentage implies that Engineers are best with lowest fat percentage score value followed by Doctors, Bureaucrats, Lawyers, and IT Professional in 46-55 yr age group of different profession.

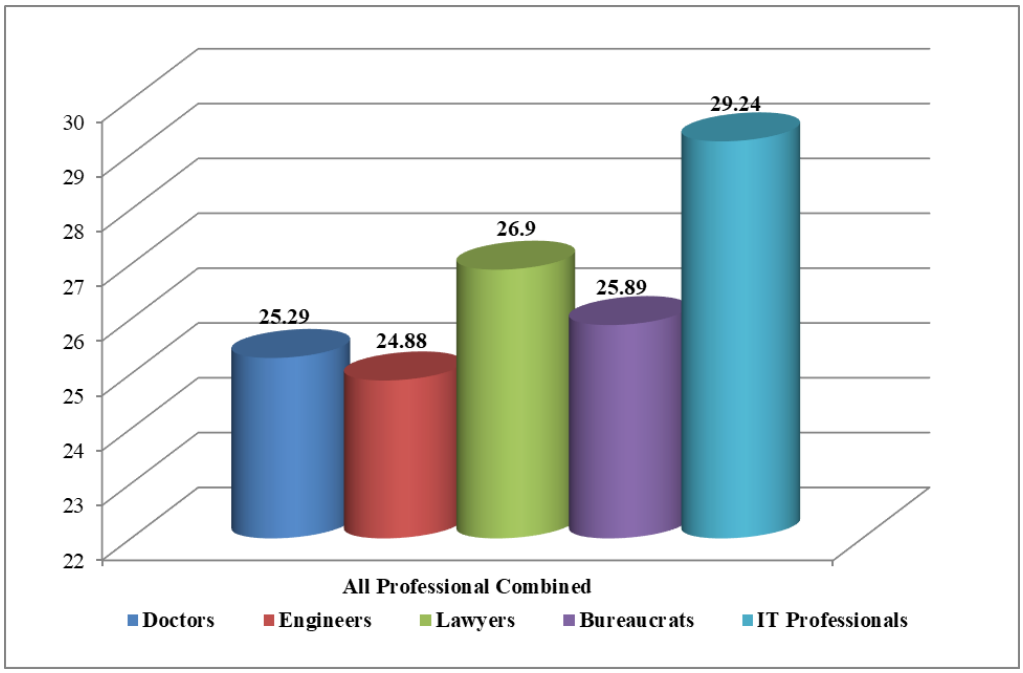

Fig 8: Post Hoc Mean Comparison on Fat Percentage between 36-45 year Age Group (All Professionals Combined)

Table 10: Post Hoc Mean Comparison on Fat Percentage between 46-55 year Age Group (All Professional Combined)

Doctors	Engineers	Lawyers	Bureaucrats	IT Professionals	Mean Difference	Standard Error	CD
24.82	26.34				1.52*	0.36745	0.74
24.82		30.31			5.49*	0.36745	
24.82			24.11		0.71	0.36745	
24.82				32.68	7.86*	0.36745	
	26.34	30.31			3.97*	0.36745	
	26.34		24.11		2.23*	0.36745	
	26.34			32.68	6.34*	0.36745	
		30.31	24.11		6.2*	0.36745	
		30.31		32.68	2.37*	0.36745	
			24.11	32.68	8.57*	0.36745	

*significant at 0.05 level of significance

The statistical finding on fat percentage implies that Bureaucrats are best with lowest fat percentage score followed by Doctors, Engineers, Lawyers and IT Professional in 25-35 yr age group of different profession.

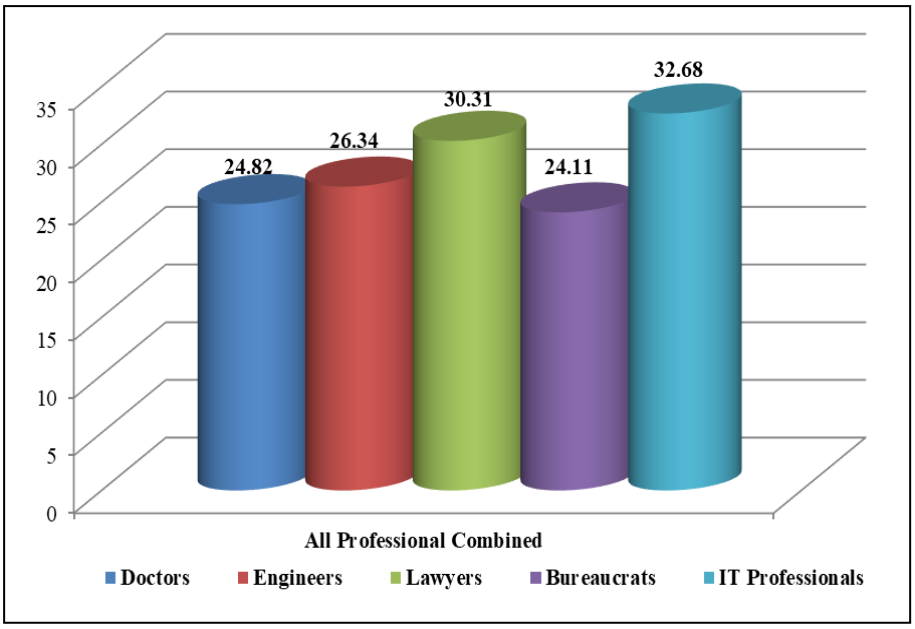

Fig 9: Post Hoc Mean Comparison on Fat Percentage between 46-55 year Age Group (All Professional Combined)

Findings

In age group 25-35 yrs of different professions finding on BMI reveals that Engineers (28.43) are best with lowest BMI value followed by Doctors (29.04), Lawyers (30.46), IT Professionals (32.13) and Bureaucrats (32.64). Similarly, in age group 36-45 yrs of different professions finding on BMI implies that Engineers (29.40) are best with lowest BMI value followed by Lawyers (29.89), Doctors (30.33), Bureaucrats (30.46) and IT Professionals (33.27). Further, in 46-55 yrs age group of different professions finding on BMI implies that Bureaucrats (29.42) are best with lowest BMI value followed by Engineers (30.64), Lawyers (32.68), IT Professionals (32.82) and Doctors (32.89).

Further, in the age group 46 – 55 years Lawyers (2522.14) were found to be best on cardiovascular endurance followed by Engineers, Bureaucrats, IT Professionals and Doctors. It was also observed that among different professional groups the cardiovascular endurance status was best at different age group. Engineers were best at age group of 25 – 35 years (2671.98), Doctors at age group of 36 – 45 years (2494.59), Lawyers 25 – 35 years (2565.56), IT professionals at 25 – 35 years (2587.33) and Bureaucrats at the age of 36 – 45 years (2390.38). However when compared among the professional's status in the age group 25 – 35 Lawyers (24.03) had the lowest Fat Percentage followed by Doctors, Engineers, IT Professionals and Bureaucrats. In the age group 36 – 45 years Engineers (24.88) were best followed by Doctors, Bureaucrats, Lawyers and IT professionals. Further in the age group 46 – 55 years Bureaucrats (24.11) were best with lowest Fat Percentage followed by Doctors, Engineers, Lawyers and IT professionals.

Conclusions

1. The five professional groups namely Doctors, Lawyers, Bureaucrats, IT Professionals and Engineers irrespective of their age have overweight and obesity problems.
2. The prevalence of overweight and obesity among all the professional groups is direct manifestations of low cardio vascular activities and sedentary lifestyle it is also failure of elite health clubs to either design appropriate exercise program and endorse complete engagement.
3. Professionals namely Doctors, Lawyers, Bureaucrats, IT professionals and Engineers are significantly having different levels of fitness status.
4. Among the five professional groups IT professionals are at extreme levels of sedentary life style.
5. All the five group of professionals have significant level of interrupted exercise program.

Recommendations

Elite health clubs needs to critically review their exercise programs and package offered to professionals and reprogram

exercise schedule based on physiological and exercise principles completely. In addition health clubs need to consider that concept of fitness has to be based on one's working environment i.e. Occupational environment and such fitness program or work out plan ensures control of obesity and other occupational health problems. Professionals visiting elite health clubs need to ensure continuity of exercise programs to derive the health benefits.

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