

Original Research Article

Health Profile Analysis of Long Term Gym Members in Student Activity Centre Gymnasium of Pramukhswami Medical College, Karamsad, Gujarat

Abdulhamid S. Mavli¹, Nilambanu H. Mojanidar², Anusha Mangalampalli³, Uday Shankar Singh⁴

¹Assistant Professor, Department of Community Medicine, Pacific Institute of Medical Sciences, Umarda, Udaipur.

²Assistant Professor, Musculoskeletal Physiotherapy, Udaipur Institute of Physiotherapy, Umarda, Udaipur.

³MBBS Internee, Pramukhswami Medical College, Karamsad.

⁴Professor, Department of Community Medicine, Pramukhswami Medical College, Karamsad.

Corresponding Author: Abdulhamid S. Mavli

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ABSTRACT

Physical fitness is essential part in maintaining good health. Due to scarcity of long term studies of exercise, the effect on weight loss, body composition and metabolic fitness are largely unknown.

Aims: The study was carried out to determine the pattern of changes in the body composition and correlates it with the socio-demographic profile of long term gym members of PSMC, Karamsad.

Settings and Design: A record-based observational study was conducted using the health profile records of 30 long terms of gym members.

Materials & Methods: Records of all 30 members between the ages of 15-50 years practiced both cardiac and muscular exercise for more than one year. Exercise was performed for 6 days per week. The health profiles of these members were maintained from June 2012 to June 2013. Health profile variables were measured using Tanita Body Composition Analyzer Model BC-545

Statistical analysis: Paired t-test was applied to the values obtained for BMI, waist circumference & waist-hip ratio.

Results: Out of 30 members, 20 (67%) were males and 10(33%) were females. 23 (77%) of gym members had visceral fat percentage below 9% .3 (30%) females had normal body fat percentage while 7(70%) females had high or very high body fat percentage. There was significant reduction in the waist circumference after 1 year of exercise (P <0.05).

Conclusion: The present study shows that regular gym training has benefited in overweight and obese people as waist circumference decreased.

Keywords: cardiac exercise, muscular exercise, Physical fitness, visceral fat percentage.

INTRODUCTION

Health is defined by the World Health Organization (WHO) as “a state of physical, social, and mental well-being”. Thus, physical fitness is an essential part of maintaining good health. Physical fitness is generally achieved through exercise. According to Howley, exercise is defined as a form of physical activity in which

planned, structured, and repetitive bodily movements are performed to improve or maintain one or more components of physical fitness. [1] There are three main forms of exercise - aerobic, regular, and resistance. Aerobic exercise involves large groups of muscles in dynamic activities that result in substantial increases in heart rate and energy expenditure. [1] Regular exercise

results in improvements in the function of the cardiovascular system and the skeletal muscles, leading to an increase in endurance performance. [1] Resistance exercise is performed to specifically increase muscular strength, power, and endurance by varying the resistance, the number of times the resistance is moved in a single group (set) of exercise, the number of sets done, and the rest interval provided between sets. [1]

The effects of physical training can be assessed by analyzing body composition of an individual. Body composition typically describes the amount of fat free mass (FFM) relative to total body mass. [1] Body composition also considers whether body fat is distributed predominately in the limbs or in the trunk, which is significant as the risk of cardiovascular and metabolic diseases is much greater with the accumulation of fat in the abdominal area. [1]

Various studies have been conducted to determine the required amount of physical exercise in adults to maintain good physical fitness. The American College of Sports Medicine and the Center for Disease Control have determined guidelines to be followed for maintaining physical health. According to their studies, to promote and maintain health, all healthy adults aged 18-65 years need moderate-intensity aerobic physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum of 20 min on three days each week. [2] To promote and maintain good health and physical independence, adults will benefit from performing activities that maintain or increase muscular strength and endurance for a minimum of two days each week. [2] In a study that was performed in regards to maintenance of body weight, it has been determined that 60-90 minutes of moderate-intensity physical activity/day may be necessary for weight maintenance after large weight losses of 30-50 lbs. [2]

Due to the scarcity of long-term studies of exercise, the effects on weight loss, body composition, and metabolic

fitness are largely unknown. [3] It is a well-known fact that a combination of aerobic and resistance exercise is recommended for maintaining proper physical fitness. [2] However, the effect of each individually has not been recorded. It is not clear whether one may provide a benefit over the other in maintaining body composition. Extensive research has not been conducted regarding the effect of gym training in the Indian setting.

The purpose of this study was to determine the pattern of changes in body composition in long-term gym members and correlate with socio-demographic profile of members. The aim of this study is to provide a clearer view on the effects of long-term gym training in the Indian setting.

MATERIALS AND METHODS

A record-based cross sectional study was conducted using the health profile records of 30 permanent gym members of Student Activity Centre Gym in Pramukhswami Medical College campus. Long term gym members between the ages of 15 - 50 years were enrolled in the gym during the time period of June 2012 to June 2013. Exclusion criteria included permanent gym members who were suffering from gross disability, chronic disease, and morbid obesity.

The purpose of the study was explained to the in charge of gym centre and written permission was taken before conducting study. As the present study was record based study and carried minimal risks to the participants, waiver of the consent was obtained and information related to the identity of the participants were been kept strictly confidential and not been revealed to the any third person.

The exercise pattern of all of the gym members was constant throughout the year. All 30 members practiced both cardiac and muscular exercise. Exercise was performed for 6 days per week, with cardiac workouts and muscular workouts being done on alternate days.

The health profile of these members was maintained from June 2012 to June 2013. Two sets of values for each member were taken, one set from June 2012 and the second set from June 2013.

Health profile variables were measured using Tanita Body Composition Analyzer Model BC-545. The following variables were been recorded: Age, Gender, Education, Occupation, Religion, Height, Weight, BMI, Visceral fat %, Total body fat %, Waist circumference, hip circumference,

Waist: Hip ratio Prior approval was taken from Institute Ethical Committee (IEC) before starting the study.

Statistical analysis

Data was inputted in MS Excel 2007, frequency and percentage was calculated. Data was analyzed using Statistical Package for Social Science (SPSS) version 14 and paired t-test was applied for the values obtained for BMI, waist circumference and waist: hip ratio.

RESULTS

Table 1: Socio-demographic profile of long term gym members

	Categories	Frequency
Age group	15-30 years	14 (46.7%)
	31-45 years	16 (53.3%)
	Total	30(100%)
Sex	Male	20 (66.7%)
	Female	10 (33.3%)
	Total	30 (100.0%)
Religion	Hindu	29 (96.6%)
	Muslim	01 (3.4%)
	Others	00 (0.0%)
	Total	30(100.0%)
Occupation	Salaried	07 (23.3%)
	Business/Shop owner	08 (26.7%)
	Housewife	04 (13.3%)
	Student	11 (36.6%)
	Total	30 (100.0%)
Education	Illiterate	0 (0%)
	Primary, secondary and higher secondary	11 (36.6%)
	Graduate	14 (46.6%)
	Post graduate and above	05 (16.6%)
	Total	30 (100%)

Of 30 gym members, 20 (67%) were males and 10(33%) were females.

29(96.6%) were Hindus and 1(3.4%) were Muslims (Table 1).

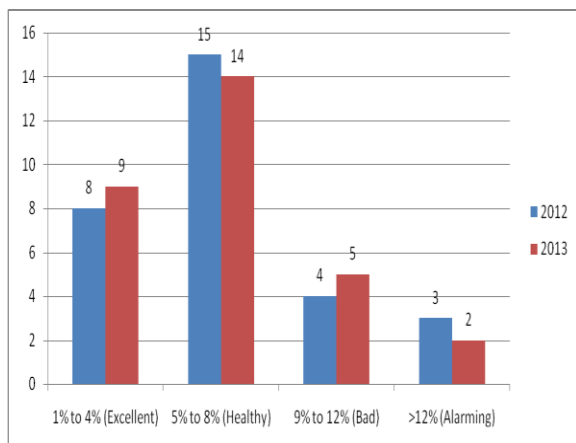


Figure 1. Distribution of visceral fat percentage (2012- 2013)

23(77%) of participants had visceral fat percentage below 9%. 7(23%) participants had visceral fat 9% and above (Figure 1).

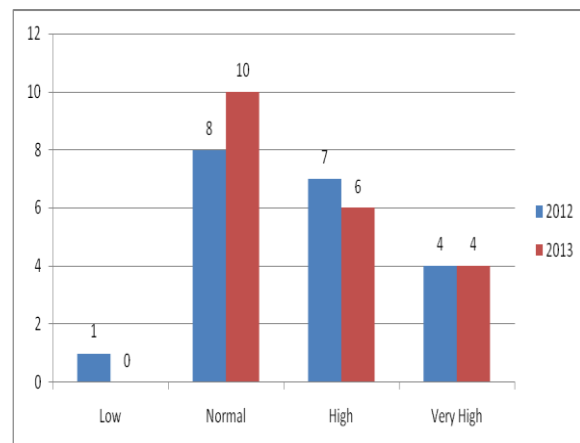


Figure 2: Distribution of body fat percentage in males (2012-2013)

11 (55%) of the male participants had high and very high body fat percentage in 2012

which has been reduced to 10(50%) male participants in 2013 (Figure 2).

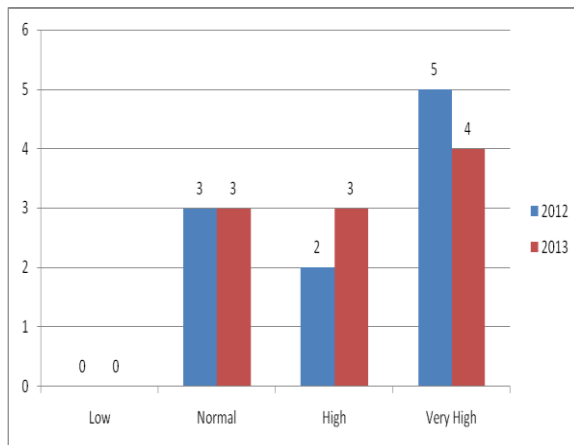


Figure 3: Distribution of body fat percentage in females (2012-2013)

Out of 10, 7 (70%) female gym members had high and very high body fat percentage in 2012 which remained same in 2013 (Figure 3).

Mean BMI of gym members was 27.08+/- 5.03 and 26.8+/- 4.76 for year 2012 and 2013 respectively. There was reduction in waist circumference of gym members over a period of one year as evident by statistically significant P value (χ^2 value=2.16, p value = 0.03). BMI and waist hip ratio did not show any significant reduction in their value. (Table 2)

Table 2: Mean Standard Deviation and Mean difference of BMI, Waist circumference and Waist: Hip ratio (2012-2013)

Categories	Mean	Std. Deviation	P value (tcalc value)	95% CI of difference
BMI 2012 (n=30)	27.080000	5.0326794	0.36(0.927)	0.27 (-0.33-0.87)
BMI 2013(n=30)	26.810000	4.7620157		
Waist circumference 2012 (n=30)	36.4	4.96	0.03(2.164)	0.8 (0.04-1.5)
Waist circumference 2013(n=30)	35.6	4.14		
W:H Ratio 2012	0.93	0.2132101	0.29(1.073)	0.04(-0.04-0.12)
W:H Ratio 2013	0.89	0.0651356		

DISCUSSION

The present study was conducted in Pramukhswami Medical College as a record-based study using data over a period of one year of long term gym members from the Student Activity Center gym. The principal aim of the project was to obtain a clearer view on the effects of long-term exercise in the Indian setting, in terms of effects of socio-demographic profile and changes in physical profile.

The present study has shown that the majority of the people who have a sedentary lifestyle, such as being a student or a housewife, tend to be in the overweight or obese category of BMI. Mortensen L et al [4] showed that BMI was consistently related to increased risk of becoming sedentary in both men and women. This is similar to our study findings in addition, it can be seen that the majority of those who are obese in the study conducted are students, thus indicating that stressful conditions promote increase in weight. In general, majority of the members studied were in the overweight category.

Visceral fat percentage and body fat percentage were also compared. Most members have good or healthy visceral fat percentage. However, body fat percentage is not as promising. Majority of members have high or very high body fat percentages, which have an adverse effect on health. In general, females tend to have high body fat percentages than males, and a greater percentage of females tend to fall in the categories of high and very high body fat percentages as compared to males. Black E [5] reported that women have generally high percentage of body fat then men which is similar to present study findings. High percentage of body fat in women is mainly due to lower basal fat oxidation process in women than man.

Based on the study conducted with 30 permanent gym members, it has been determined that there was not a significant difference in BMI over one year according to the paired t-test conducted, thus indicating that the BMI status was constant after one year of exercise. Patel CH Mishra VR et al [6] found that there was significant reduction in BMI after doing exercise for

long time. This finding was not consistent with current study. It could be due to consideration of diet restriction apart from exercise in Patel CH study. There was a significant difference in waist circumference, indicating that after one year of exercise, waist circumference decreased. Adeniyi A.F et al [7] in his study reported there was reduction in the waist circumference which was statistically significant ($p=0.03$) thus findings were similar to present study findings. There was not a significant difference in waist-hip ratio, thus indicating that after one year of exercise, waist-hip ratio did not differ much.

The limitations of this study are that the sample size was relatively small, as the study was conducted in only long term gym members. Most of the people attending the gym studied were temporary members, thus the research was conducted on a small scale. Therefore, the findings of present study cannot be generalized to entire Gujarati or Indian population. The performance of the participants was not observed directly, as this was a record-based study. Thus the only evidence of exercise was based on the changes observed in physical profile. In addition, diet of the members was not taken into account while performing the analysis. It has been proven that diet also has an effect on physical profile, but it has not been taken into account in this study. Savitz DA [8] in his book mentioned that problem in many record based study is that general lack of information about risk factors. Although dietary influences might confound a study of adverse influence of the genetic environment, sufficient information on diet is generally not available from medical records. Thus, information on other aspects of lifestyle and genetic background for example, is likewise not available in such sources making it impossible to address these factors. Socio-demographic characteristics of the groups under study is of some value in avoiding confounding, but its presence does not provide assurance that specific risk factors like smoking, diet

history, alcohol consumption are also equivalent across the exposure groups. [8]

The type of exercise performed could not be evaluated either, as the type of exercise performed was constant amongst all the members. Thus, it could not be determined whether a certain type of exercise was more effective than another in terms of maintaining physical profile.

In the future, a large-scale study should be conducted in order to have a better representation of the sample population under evaluation. Additionally, more variable factors such as diet history etc. should be evaluated, which were not taken into consideration in this study conducted.

REFERENCES

1. Howley ET. Type of activity: resistance, aerobic and leisure versus occupational physical activity. *Official Journal of the American College of Sports Medicine*.2001; 33(6): S364-S369.
2. Haskell WL, Lee IM, Pate RR et al. Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association. *Official Journal of the American College of Sports Medicine*. 2007; 116(9):1081-1093.
3. Donnelly JE, Jacobsen DJ, Heelan KS et al. The effects of 18 months of intermittent vs continuous exercise on aerobic capacity, body weight and composition, and metabolic fitness in previously sedentary, moderately obese females. *International Journal of Obesity*.2000; 24(5): 566-572.
4. Mortensen, L. H., Siegler, I. C., Barefoot, J. C., Grønbaek, M. and Sørensen, T. I.A. (2006), Prospective Associations between Sedentary Lifestyle and BMI in Midlife. *Obesity*. 2006; 14: 1462-1471.
5. Blaak E. Gender differences in fat metabolism. *Current Opinion in Clinical Nutrition and Metabolic Care*. 2001; 4(6):499-502.
6. Patel CH, Mishra VR, Naik SS, Dayama S, Jadeja JM.A study of Correlation between Exercise, Body Mass Index

- and Heart Rate. International Journal of Basic and Applied Physiology. 2012; 1(1).
7. A.F. Adeniyi, A. E. Uloko, O. O. Ogwumike, A. O. Sanya, and A. A. Fasanmade, "Time Course of Improvement of Metabolic Parameters after a 12 Week Physical Exercise Programme in Patients with Type 2 Diabetes: The Influence of Gender in a Nigerian Population," Bio Med Research International, vol. 2013, Article ID 310574, 9 pages, 2013. doi:10.1155/2013/310574.
 8. Savitz DA. The Role of Medical Records in Evaluating Hazardous Chemical Exposures. In: Saxena J, editor. Hazard Assessment of Chemicals, 4th ed. London: Academic Press, Inc Ltd; 1984. p. 128-129.

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