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Spirometry Assessment of Persons Doing Regular Aerobic Exercises.

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ABSTRACT

The aim of the study was to study the differences in various parameters of lung function as assessed by spirometry in subjects who do regular aerobic exercises versus those not doing regular aerobic exercises in healthy young adults (mean age 26-28 years). Duration of Study was of 1 month. Sample Size was (n) =50 in each group. The groups were defined as follows: Group A (Study Group): Doing regular aerobic exercise for at least 20 minutes a day, for at least five days a week, for at least one year. Group B (Control Group): Not doing regular exercise as described above. A spirometry was performed. Mean FEV₁/FVC in the study group was 85.39 as compared to 83.8 in the control group. Lung functions as assessed by spirometry are not significantly better in the persons doing regular aerobic exercises as compared to the persons not doing regular exercises. The good effects of regular exercises on respiratory function may be apparent after a longer duration of exercises and also may become more apparent in relatively older population when the functions of body systems start derailing. Doing a similar study in older population (age above 40 years) may help us to assess this hypothesis.

Keywords: aerobic exercise, spirometry, sedentary, smoker.

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INTRODUCTION

It is generally believed that doing regular aerobic exercises is beneficial as it improves the cardio-respiratory function and overall stamina [1]. Also, starting exercises in relatively young age gives more benefits [2]. As per the standard guidelines, aerobic exercises for at least 20 minutes a day for at least 5 days a week, gives the optimal benefits [3]. We evaluated the lung function of young people in their twenties using spirometry, to assess if regular exercises did make any improvement to the lung function.

Aim

To study the effect of regular aerobic exercises on spirometry.

Objective

To study the differences in various parameters of lung function as assessed by spirometry in subjects who do regular aerobic exercises vs. those not doing regular aerobic exercises.

MATERIALS AND METHODS

It was a case control, single point, cross sectional study done at Dr. D.Y. Patil Medical College, hospital and research centre, Pimpri, Pune. Duration of Study was of 1 month. Sample Size of 50 in each group. The groups are defined as follows:

Group A (Study Group): Doing regular aerobic exercise for at least 20 minutes a day, for at least five days a week, for at least one year. These would include vigorous exercises such as running, jogging, treadmill, swimming, dancing, out-door exercises; but would exclude Yoga and breathing exercises. These exercises are additional to any work related activities the person may be doing.

Group B (Control Group): Not doing regular exercise as described above.

Inclusion criteria

The persons enrolled in the study were normal healthy adults who satisfy the following criteria:

- Written consent obtained from the study participants.
- Able to perform spirometry meeting ATS guidelines for Acceptability.
- A sedentary lifestyle i.e. a lifestyle with no or irregular physical activity.

Exclusion criteria

- Regular smokers (defined as people who have smoked at least 100 cigarettes in their life time).
- Subjects with any history of significant respiratory disease that has potential to scar the lungs.
- Subjects with acute respiratory illness/respiratory symptoms within last 4 weeks before enrollment.
- Persons in whom spirometry is contraindicated.

Methods

Individuals who are doing regular exercise were enrolled as a study group (doing regular aerobic exercise for at least 20 minutes a day, for at least five days a week, for at least one year). Those suffering from any acute illness, smokers / ex-smokers and those having past history of a significant respiratory illness that might affect the spirometry results were excluded from the study. Known cases of asthma were excluded. The enrolled subjects performed spirometry after following all the necessary pre-requisites and the results were analyzed using ATS criteria. The subjects with unacceptable spirometry or incomplete data were removed from the analysis.

A total of 50 subjects qualified for the analysis. A control group not doing regular exercise matched for age, height, sex and smoking history was then enrolled. These persons were also assessed with the same protocol.

RESULTS

Mean FEV1/FVC in the study group was 85.39 as compared to 83.8 in the control group. Mean FVC in the study group was 92.64 as compared to 88.7 in the control group. (Refer to the chart). Overall lung functions as assessed by spirometry showed little difference between the two groups, that was statistically not significant.

Table 1

Parameters	Study group (% prediction)	Control group (% prediction)
FEV1	87.1	86.27
FEV1/FVC	85.39	83.8
FVC	92.64	88.7
FEF 25-75	66.57	64.7

DISCUSSION

Lung functions as assessed by spirometry are not significantly better in the persons doing regular aerobic exercises as compared to the persons not doing regular exercises. This is in contrast with the popular belief. One possible explanation is that the individuals in both groups were relatively young population (with a mean age of 26-28 years) and by virtue of their youth, are likely to have optimal lung function in any case. The good effects of regular exercises on respiratory function may be apparent after a longer duration of exercises and also may become more apparent in relatively older population when the functions of body systems start derailing. Doing a similar study in older population (age above 40 years) may help us to assess this hypothesis. Following up the same population over next two decades will also answer the question, though it may be much more difficult to follow them for a long time.

CONCLUSION

Aerobic exercise has a beneficial effect only when it is done over a long period. It would be more beneficial for improving pulmonary function if practiced even after the age of 40 years.

REFERENCES

- [1] Shephard RJ, Balady GJ. *Circulation* 1999;99:963-72.
- [2] Wilmore JH, Costill DL. *Physiology of sport and exercise*. 3. edn. Champaign (IL):Human Kinetics; 2004
- [3] McArdle WD, Katch FI, Katch VL. *Exercise physiology. Energy, nutrition, and human performance*. 5. edn. Philadelphia: Lippincott Williams & Wilkins; 2001.