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# Effect of Stress on Cardio Respiratory Fitness in Terms of Aerobic Power and Anaerobic Power

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**Abstract**
**Back Ground And Aim:** *Medical students confront with significant academic, psychological, existential stress throughout their professional training therefore this study is plan to see the effect of stress on cardio-respiratory fitness in form of aerobic and anaerobic power*
**Material and method:** *This study was done to assess the effects of stress on cardio-respiratory fitness in terms of aerobic and anaerobic power in 60 young, healthy Medical students of age group17-22 yrs. In the groups, aerobic capacity, anaerobic capacity and was measured at the beginning and after 6 month.. Results were analysed statistically by using student's t-test.*
**Result:** *After six months, there is no any significant change in aerobic power and in anaerobic power in the group indicating improved cardio-respiratory fitness.*
*Conclusion: there is no as such change in Aerobic power and Anaerbic power*
**Key Word:** *Stress, Aerobic power (v02 max) and Anaerobic power*

## Introduction

Medical students confront with significant academic, psychological, existential stressor throughout their professional training [(1)].

Today younger generation is living in a very competitive, challenging world and is subjected to physical and mental stress. Physical fitness is defined as Cardio-respiratory fitness, flexibility, muscle power and agility. Cardio-respiratory fitness included Aerobic power and anaerobic power [(2)].

Cardio-respiratory fitness is a major component of health- related fitness and depend on large scale no . of phenotypes associated primarily with cardiac, vascular and respiratory functions. Measurements of sub maximal exercise capacity and maximal aerobic power are performed to access cardio-respiratory fitness [(3)].

The respiratory endurance is an essential factor in fitness. that enables the body to sustain dynamic exercise using large muscle group, overtime and at a moderate to high intensity level. It is the ability of the respiratory system and lung to supply o2 and fuel to skeletal muscle during a period of continued physical activity Improve respiratory endurance [(4)].

The aim of respiratory endurance is to built the capacity of each muscle to work efficiently and also recover faster at less reserve of o2. For respiratory endurance here exercise is done with

the help of tread mill. This relatively non invasive dynamic physiologic overview permit the evolution of both sub maximal and peak exercise response, providing the clinical decision making [5].

**Selection of subject**

This study was conducted in dept of physiology between period Sept 2006 to April 2007. Control group consisted of age matched 60 students of dental college (30 boys and 30 girls). After routine medical checkup written consent was taken from all the students.

**Inclusion criteria**

1. Subjects in the age between 17-22 years.
2. Healthy Subject not suffering from any systemic illness

**Exclusion criteria**

1. Subjects suffering from any respiratory and cardiovascular diseases or major systemic illness like Diabetes mellitus.
2. Smoker students.
3. Students non willing for study
4. Students attending gymnasium or any sports event.

**Experimental Protocol**

In the groups, aerobic capacity, anaerobic capacity and. Tests were done at 9 a.m. Aerobic power was measured in terms of $VO_2$ max after giving a standardized exercise by step test (Harvard step) with a desired speed (with metronome). For male candidates step was of 40 cm height and for females 30 cms. Speed of test was adjusted 30 steps /min with metronome. Resting pulse rate and post exercise pulse rate was measured and then with A strands nomogram, $V0_2$ max was measured[11].

Anaerobic power was measured by Sargent's jump-reach test. Person is asked to jump vertically up without any start. His vertical jump was measured so also his body weight. Three reading were taken and best one was taken for observation. Considering weight of the person by standard nomogram chart anaerobic capacity was measured[12].

All test were repeated after 6 months at 9am for all the subjects in the control. Results were analyzed statistically by using student 't' test,

**Table 1:** Age and Sex wise distribution of control group

| Age (Yrs) | Sex | | Total |
|---|---|---|---|
| | Male | Female | |
| 18 – 19 | 9 | 17 | 26 |
| 19 – 20 | 21 | 13 | 34 |
| Total | 30 | 30 | 60 |

Table no. 1 shows age and sex wise distribution of control group. There were sixty students in control group, out of which thirty were males and thirty were females. Among them there were 9 males and 17 females between age range of 18-19 years and 21 males and 13 females between age ranges of 19-20 years.

**Table 2:** Comparison of Aerobic power ($VO_2$ max) and anaerobic power in control group (males) before and after six months.

| Parameters | Before | After 6 months | t Value | P Value |
|---|---|---|---|---|
| | Mean ± SD (n=30) | Mean ± SD (n=30) | | |
| $VO_2$ max (Lit/min) | 2.88 ± 0.48 | 2.86 ± 0.46 | 1.99 | >0.05 |
| Anaerobic power (Kg.m/sec) | 102.63 ± 24.89 | 103.4 ± 26.19 | 1.18 | >0.05 |

Table no.2 shows mean of $VO_2$ max values and anaerobic power observed in control group (males) before and after 6 months. There was an insignificant difference between $VO_2$ max and anaerobic power values of control group (males) (P value > 0.05) before and after six months.

**Table 3:** Comparison of Aerobic power ($VO_2$ max) and anaerobic power in control group (females) before and after six months.

| Parameters | Before | After 6 months | t Value | P Value |
|---|---|---|---|---|
| | Mean ± SD (n=30) | Mean ± SD (n=30) | | |
| $VO_2$ max (Lit/min) | 2.31 ± 0.47 | 2.33 ± 0.46 | 1.73 | >0.05 |
| Anaerobic power (Kg.m/sec) | 69.43 ± 19.98 | 73.6 ± 28.62 | 0.99 | >0.05 |

Table no.3 shows mean of $VO_2$ max values and anaerobic power observed in control group (females) before and after 6 months. There was an insignificant difference between $VO_2$ max and anaerobic power values of control group (females) (P value > 0.05) before and after six months.

**Discussion**

The lack of research into the EFFECT OF STRESS ON CARDIORESPIRATORY FITNESS IN TERMS OF AEROBIC POWER AND ANAEROBIC POWER or Time duration is short like 6 months prompted that there was no change in Cardio respiratory fitness. It was found that stress in the form of regular study and exam held for medical students had no significant effect on aerobic power ($Vo_2$ max) and anaerobic power. The absence of any detoriation in cardiovascular function supports the conclusion that stress in the form study and regular exam are inappropriate methods for developing and maintaining cardiovascular fitness. Assessment of cardiovascular endurance, anaerobic power, and anaerobic capacity in adolescent medical student's because of stress are inappropriate methods of improving or disimprovind and maintaining cardiorespiratory fitness.

**Conclusion**

There is no as such change in Aerobic power and Anaerbic power.

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