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Variability of Heart Rate and Blood Pressure in Medical Students after Different Degrees of Excercise

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Abstract

Background: Effect of exercise on heart rate and blood pressure which is important for clinical studies and also importance of exercise for controlling blood pressure in routine lifestyle. *Objectives of the Study:* To study change in heart rate and blood pressure in medical students after different degrees of excercise. *Material and Methods:* The retrospective study done by using records of 150 healthy medical students of 2015-16 batch divided into 50 each group for mild, moderate, severe excercise respectively, studying at the Vijayanagar Institute of Medical Sciences belonging to both the sexes volunteered for the study. The study was conducted at the department of Physiology during the month of November 16. *Results:* Table and graph showing mild, moderate exercise will increase slightly heart rate and blood pressure, severe exercise will increase more. *Conclusion:* The study depicts the variation of heart rate and blood pressure for different degrees of exercise among the students in VIMS, Bellary. Also to create awareness about exercise in our routine life style to maintain normal blood pressure.

Keywords: Heart Rate; Blood Pressure; Exercise; First Year MBBS Students.

Introduction

It is generally agreed that during dynamic exercise there is an increase in systolic blood pressure and heart rate, while diastolic blood pressure changes little [1]. The absence of a reflex bradycardia in response to the rise in systolic or mean arterial pressure is attributable partly to a reduction in baroreflex sensitivity. There [1] is less agreement about the changes in blood pressure following exercise [1]; some investigators have observed a slow return of blood pressure to the pre-exercise levels [1]. It has been well established that the magnitude of neural and hemodynamic responses during exercise is directly related to exercise intensity [2,3]. Thus, it is possible that different exercise intensities have also distinct effects on cardiovascular changes after exercise [4].

Because blood pressure and heart rate responses after exercise influenced by grades of excercise. Therefore, the goal of the present investigation was to study the effect of different exercise intensities on post-exercise blood pressure, heart rate variation in humans.

Aims and Objectives

To study heart rate and blood pressure in medical students after different degrees of excercise.

Material and Methods

The retrospective study done by using practical record books of 150 healthy medical students of 2015-16 batch divided into 50 each group for mild, moderate, severe excercise respectively, studying at the Vijayanagar Institute of Medical Sciences. The study was conducted at the department of Physiology during the month of November 16.

Statistical Analysis

The data analysis was carried out using the Statistics (SPSS). Statistically there is difference in mean values between groups was assessed using paired t-test.

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Results

1. Table and graph showing Heart rate variation before and after exercise in first year medical students of VIMS, Ballari, Karnataka, India.

   Study conducted during 9 am to 12pm in dept of physiology lab, one reading randomly and asked subject to do exercise then immediately after exercise readings are noted.

2. Table and graph showing Blood pressure variation before and after exercise in first year medical students of VIMS, Ballari, Karnataka, India.

Table 1:

Exercise	Before	After
Mild	76±2	84±2
Moderate	78±4	84±2
Severe	80±2	90±2

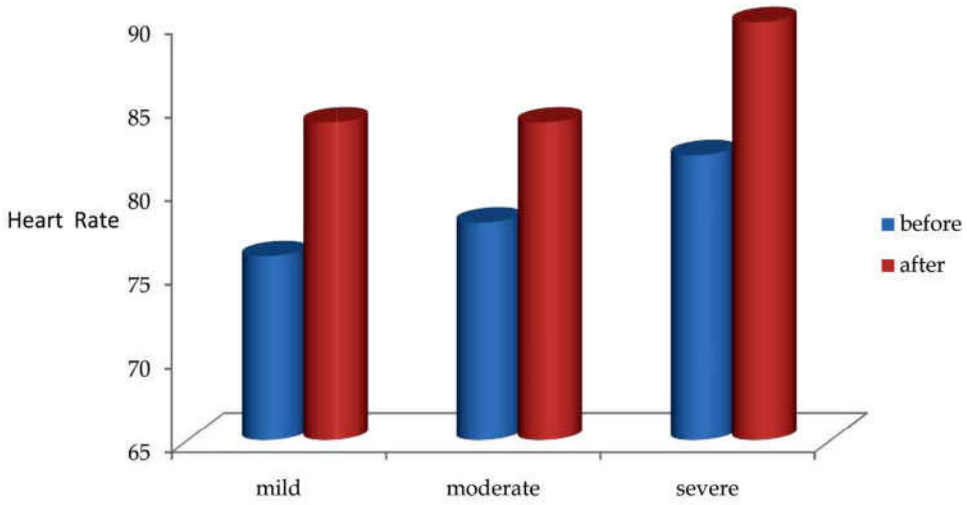
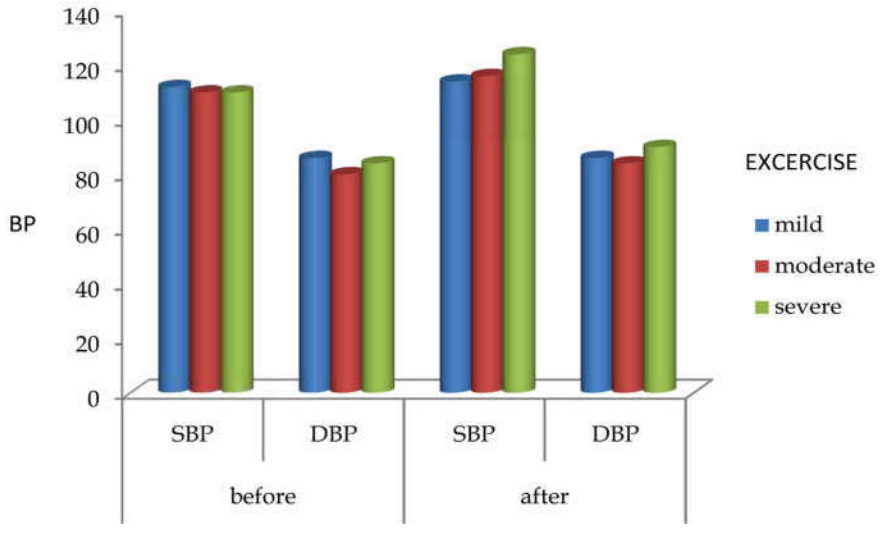


Table 2:

Exercise	Before SBP	DBP	After SBP	DBP
Mild	112±2	86±4	114±2	86±2
Moderate	110±4	80±2	116±4	84±4
Severe	110±2	84±4	124±2	90±2



Discussion

In mild to moderate exercise,in humans anticipation of physical activity inhibits vagal nerve impulses to the heart and increases sympathetic discharge. The result is an increase in heart rate and myocardial contractility. The tachycardia and enhanced contractility increase cardiac output [5]. When cardiac stimulation occurs, the sympathetic nervous system also changes vascular resistance in the periphery. Sympathetic-mediated vasoconstriction increases vascular resistance and thereby diverts blood away from the skin, kidneys, splanchnic regions, and inactive muscle. This increased vascular resistance persists throughout the period of exercise [5]. Cardiac output and blood flow to active muscles increase with progressive increases in the intensity of exercise [5].

Effect of excercise on systemic arterial BP varies with the intensity(degrees) of execrcise. Systolic BP increases in linearity with the severity of exercise at all ages and may increase upto 200 mm Hg. increases due to increased sympathetic activity in response to exercise. In mild to moderate excercise, diastolic BP, shows either no change or slighty increases. In severe exercise, it increases due to vasoconstriction [6]. During dynamic exercise the degree of increase in heart rate,cardiac output, stroke volume, oxygen extraction and blood pressure depends on severity of exercise and amount of muscles mass involved [7]. Heart rate, rate pressure product, and systolic and mean blood pressures increased significantly during exercise and the increases were greater with higher exercise intensities. Diastolic blood pressure did not change during exercise of any intensity [4].

Conclusion

The present study has a significant implication regarding exercise effect on blood pressure and heart rate with respect to different degrees of exercise. Mild to Moderate exercise causes slight changes in heart rate and Blood pressure when compare to severe exercise.

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