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RESEARCH ARTICLE

Effect of yoga and meditation on recovery pulse rate which is an index of physical fitness

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ABSTRACT

Background: Regular exercise and practice of yoga and meditation are known to have beneficial effects on different organ systems including cardiovascular system as well. **Aims and Objectives:** The objective of this study has been attempted to compare cardiovascular state at rest**. Materials and Methods:** Comparing resting pulse rate and physical fitness index (PFI) in sedentary and yoga trained individual within the same age group. PFI was recorded using Harvard step test. **Results:** There was significant decrease in recovery pulse rate in test group which resulted in increased PFI. **Conclusion:** Increase in the baroreflex sensitivity and decrease sympathetic tone after regular practice of yoga and meditation.

KEY WORDS: Physical Fitness Index; Recovery Pulse Rate; Yoga; Meditation

INTRODUCTION

Today, yoga attracts people primarily as an easy way to good health. The fact that yogis are generally in good health is because the yogic lifestyle includes physical activity, a balanced diet, and mental peace - all ingredients for good health. However, health is a by-product of yoga, not its goal. Yoga provides a new way of looking at life. Hence, everything remaining the same, the person starts feeling better. A method is not on changing the circumstances but on changing our attitude to circumstances in potentially infallible. Regular yoga has been known to have beneficial effects on heart by expanding the reserve capacity for enhancing the cardiac output.[1]

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Physical fitness is defined as ability to carry out daily tasks with vigor and alertness without undue fatigue with ample energy to enjoy leisure time pursuits to meet unusual situations and unforeseen emergencies.[2]

Objective

The present study was conducted to know the effect of yoga and meditation on resting pulse rate.

MATERIALS AND METHODS

A total of 60 students both males and females in the age group of 18–27 years undergoing yoga and meditation training formed the test group. Age- and sex-matched students who did not undergo yoga and meditation training formed the control group. After taking concern, the physical fitness index (PFI) was recorded in test and control group using Harvard step test.

Inclusion Criteria

Students aged between 18 and 27 years who are regularly practicing yoga and meditation will be included for the

test group. For the control group, age- and sex-matched individuals who do not practice yoga, meditation, or any other forms of exercise or training.

Exclusion Criteria

Students who have any cardiovascular disorders, family history of CVS problems, or hypertension, musculoskeletal dysfunctions were excluded from the study.

Harvard step test was developed by Brouha *et al*.[3] in the Harvard Fatigue Laboratories. Harvard step is a heavily constructed wooden step consisting of a stepping platform 18 inches in height. PFI was determined by Harvard step test where the student stepped up and down at a rate of 30 times a min, for a maximum of 5 min continuously unless he stops from exhaustion. The duration of his effort to the nearest second was noted. When the subject successfully completed the test, recovery time starts counting. All the subjects were asked to stop at 5 min. Beginning exactly 1 min after he stops, the radial pulse was taken. Three pulse readings were taken during this recovery phase. First reading from 1 min to 1 min 30 s, the second one being 2 min–2 min 30 s, and the third reading 3 min–3 min 30 s after exercise.

PFI = [Duration of exercise in seconds x 100]/2 × Sum of 3½ min recovery phase pulse counts.

PFI score of <55 is considered as poor, 55–64 as low average, 65–79 as high average, 80–89 as good, and >90 as excellent. Keen and Sloan have correlated Harvard step test with pre-exercise pulse.[4]

RESULTS

The results of this study show that there is significant decrease in resting pulse rate and also significant increase in PFI in the test group compared to control group [Tables 1 and 2].

Table 1: Comparison of PFI in test and control groups

Gender	*n*	Test	Control
Male	30	111.41±13.90	82.07±10.55
Female	30	95.50±7.42	58.12±12.71
Total	60	103.46±14.24	69.60±16.37

Table 2: Comparison of resting pulse rate in test and control groups

Gender	*n*	Test	Control
Male	30	68.46±4.13	76.86±6.02
Female	30	67.46±6.44	82.33±4.77
Total	60	67.96±5.34	80.00±6.26

DISCUSSION

In our study, there was a decrease in the resting pulse rate in yoga-trained individuals. Decrease resting heart rates lead to early recovery of the pulse rate which is the basis for increased PFI. A study conducted by Choudhuri *et al*. showed increase in cardiovascular fitness after yoga training by measurement of heart rate.[5] Heart rate or pulse rate is mainly the function of sinus node autorhythmicity which is mainly the function of sympathetic and parasympathetic system. There are several studies suggest that well-trained individuals present a lower resting pulse rate indicating higher parasympathetic activity or lower sympathetic activity. Resting bradycardia can be due to intrinsic adaptation of the sinus node and also other factors such as increase of venous return and stroke volume.[6]

The Recovery time duration by which a person recovers from given exercise or an activity. As a result of yoga training, there is faster ATP generation, elimination of lactic acid.[7] PFI is related to recovery pulse rate which is function of hemodynamics and not under voluntary control Gupta.[8]

There can also be conditioning effect of yoga on autonomic nervous system and mediated through the limbic system and higher areas of central nervous system which was reported by Selvamurthy *et al*.[9] A study by Parkhad *et al*. showed certain yogasana decrease the heart rate by decreasing the sympathetic tone.[10]

Our study cannot explain the basis for decrease sympathetic tone.

CONCLUSION

In the present day, tension-filled society, yoga, and meditation alone can bring solace to all. Hence, regular practice of yoga and medication is need of the hour.

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