



Impact of Pranayama on Resting Heart Rate Among Female of Different Age Group

KEYWORDS

Anuloma Viloma pranayama, female, age, heart rate

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ABSTRACT The purpose of this study is to assess the effects of pranayama on resting heart rate among female of different age group. Ninety (90) female subjects were selected in early adulthood and their age ranging between 20 to 39 years. These female working subjects were selected from Swami Vivekanand Subharti University, Meerut, Uttar Pradesh and novice with pranayama. These subjects were classified into three groups based on their age as Group 1: 21 to 25 years, Group 2: 26 to 30 years and Group 3: 31 to 35 years each constitutes fifteen (30) subjects. The resting heart rate was selected as criterion variable. The selected female subjects were administered Anuloma Viloma pranayama training daily in the morning between 06:00am to 07:00am for three months. Analysis of Covariance (ANCOVA) on resting heart rate between the groups was significant, $F(2,86) = 5.350, p = 0.006$. The findings of the study show that resting heart rate tends to decrease as a result of Anuloma Viloma pranayama training for three months. It is concluded that daily practice of Anuloma Viloma pranayama training for three months displayed significant reduction in resting heart rate among different age group female, among which 26 to 30 years old female subjects elicited 5.05% of reduction in resting heart rate.

Introduction

Years ago the practice of yoga has evolved. In ancient times, to practice yoga was to reach a state of higher consciousness, which not everyone was able to achieve. Today, however, yoga is seen as a universal and comprehensive practice, open to all, from the newest convert to the most experienced and accomplished. Yoga can be tailored to suit each individual's capabilities, allowing students to develop and improve at their own pace and the ultimate aim being to fully master the art of meditation to reach an "accomplished state" with body and mind united in total harmony. Yoga benefits everyone, regardless of age, beliefs, disposition and physical capabilities, with results ranging from the positive to the truly remarkable. The regular practice of yoga teaches everyone how to develop a greater awareness of both our physical and psychological states, which in turn increases our ability to cope with everyday stresses and situations, enabling us to step back and assess our reactions and coping mechanisms (Iyengar 2008).

The ancient yogis advocated the practice of pranayama to unite the breath with the mind, and thus with the *prana* or life-force. *Prana* is energy, and *ayama* is the storing and distribution of that energy. *Ayama* has three aspects or movements: vertical extension, horizontal extension, and cyclical extension. By practicing pranayama, we learn to move energy vertically, horizontally, and cyclically to the frontiers of the body (Iyengar 2008). The purpose of this study is to assess the effects of pranayama on resting heart rate among female of different age group.

Methods

Subjects

Ninety (90) female subjects were selected in early adulthood and their age ranging between 20 to 39 years. These female working subjects were selected from Swami Vivekanand Subharti University, Meerut, Uttar Pradesh and novice with pranayama. These subjects were classified

into three groups based on their age as Group 1: 21 to 25 years, Group 2: 26 to 30 years and Group 3: 31 to 35 years each constitutes fifteen (30) subjects. The selected subjects gave willingness to participate in this study. After getting the consent, 90 healthy male subjects were medically examined and found they were free from diseases.

Variable

The resting heart rate was selected as criterion variable. This test intends to measure the number of heart beats per minute recorded during resting condition for which stopwatch and stethoscope was used. The subjects were asked to remain in sitting position and the radial heart was palpated for one minute and the score was recorded as number of beats per minute.

Training Protocol

Anuloma Viloma pranayama practice was administered daily in the morning between 06:00am to 07:00am for three months. The subject was seated in a comfortable sitting posture with back straight. Inhalation is through one nostril, and then breath is retained followed by exhalation through the other nostril in a ratio of 2:8:4, with eyes closed and concentrating on breathing. One round of Anulom Vilom pranayam consists of six steps:-

1. Inhale through the left nostril, closing the right with the thumb, to the count of four.
2. Hold the breath, closing both nostrils, to the count of sixteen.
3. Exhale through the right nostril, closing the left with the ring and little fingers, to the count of eight.
4. Inhale through the right nostril, keeping the left nostril closed with the ring and little fingers, to the count of four.
5. Hold the breath, closing both nostrils, to the count of sixteen.
6. Exhale through the left nostril, keeping the right closed with the thumb, to the count of eight.

This is one complete round of Anulom Vilom pranayam. After every 10 minutes one takes rest pause for 20-30 seconds. This procedure was practiced for 20 minutes daily.

Statistical technique

The data collected were statistically analysed to examine the changes in female with respect to different age group. The experimental design used for the present investigation was Analysis of Covariance (ANCOVA). When *F* is significant Scheffe *S* post hoc test was applied. Paired *t* test was applied to the changes within the group as a result of Anulom Vilom pranayama. The level of confidence was fixed at 0.05 to test the significance. The data was analysed in computer system by using statistical package for social science (SPSS) version 16.

Results

Resting heart rate between the groups was significant, $F(2,86) = 5.350$, $p = 0.006$, indicating that after adjusting pre-test scores, there was a significant difference among the groups on post-test scores on heart rate. The findings of the study show that resting heart rate tends to decrease as a result of Anuloma Viloma pranayama training for three months. It is obvious that covariate pre testing significantly determines the difference among different age group female on heart rate as obtained $F(1, 86) = 126.63$ ($p = 0.000$). This finding implies that the post testing data is influenced significantly by pre testing data on the difference among different age group females on heart rate. Furthermore, it is found that though the effect of pretesting is removed, the differences on heart rate among different age group females are statistically established.

Table 1
Descriptive statistics and *t* ratio resting heart rate

Testing periods	21 to 25	26 to 30	31 to 35
Pre-test	67.50 ± 4.21	68.10 ± 3.78	71.10 ± 3.76
Post-test	65.96 ± 4.04	64.66 ± 3.34	68.76 ± 3.39
MD	1.54	3.44	2.34
% of changes	2.28%	5.05%	3.29%
t value	4.246	7.647	7.602
p	0.000	0.000	0.000

From table 1 it is inferred that heart rate decreased in all the three groups but in the age category 26 to 30 years female displayed greater decrease in heart rate than others. Similar, effects are elicited in other two groups.

Discussion

In the present study resting heart rate showed significant difference among the groups and showed a significant decrease within different age group female as a result of Anuloma Viloma pranayama supplemented daily for three months. The result observed in the present study is in with the findings of Udupa *et al.* (2003); Selvamurthy *et al.* (1983) & Anand (1991). Pranayama is an art of control of breathing. A practitioner of pranayama not only tries to breathe, but at the same time, also tries to keep his/her attention on the act of breathing, leading to concentration. These acts of concentration remove his attention from worldly worries and de-stress female subjects. This stress free state of mind evokes relaxed responses (Bijlani, 2004). In this relaxed state, parasympathetic nerve activity overrides sympathetic nerve activity (Udupa *et al.*, 2003). Therefore, the significant decline in resting heart rate in the Anuloma Viloma pranayama practice could be largely due to better parasympathetic control over the heart.

Conclusion

It is concluded that daily practice of Anuloma Viloma pranayama training for three months displayed significant reduction in resting heart rate among different age group female, among which 26 to 30 years old female subjects elicited 5.05% of reduction in resting heart rate. This has clinical significance by supplementing to hypertensive subjects.

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