

Research on the Immediate Effect of “Health Qigong •Baduanjin”

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Abstract—Aims: This research discusses the immediate effect of Health Qigong • Baduanjin. **Methods:** 60 citizens in middle and old age, who have a good master of the way doing Baduanjin exercises will receive immediate physiological index tests after taking exercises. **Results:** Immediate systolic pressure and pulse pressure are higher than before taking exercises among the middle aged and elderly, and the distinction is very significant ($P < 0.01$). The diastolic pressure is inclined to decrease among them, but the differences are not so conspicuous. The finger temperature rises among women and the differences can be seen significantly ($P < 0.05$). **Conclusions:** Health Qigong • Baduanjin exercises exert favorable effect on the middle-aged and elderly people's blood pressure and contribute to improving their blood circulation.

Keywords- Health Qigong • Baduanjin; Immediate Effects; Experiment

I. INTRODUCTION

Health Qigong • Baduanjin is one of the collective creations of a remarkable number of experts and scholars with the collaboration and support under the Organization of Fitness Qigong Management Center of General Administration of Sports in recent years. It has been popularized all over the country even the whole world. As one of Chinese Traditional Medicine sports cures, Health Qigong • Baduanjin is a kind of aerobic exercise characterised by soft movements and moderate intensity. People can reach a harmonious state of comprehensive physical and psychological health through the adjustment of body's gesture and emotion as well as the exercise of breath when they go on Health Qigong • Baduanjin exercises. Experimentally, the article compares the physiological indexes of before-and-after doing exercises in order to figure out the health effects of Health Qigong • Baduanjin.

II. RESEARCH SUBJECTS AND METHODS

A. Research Subjects: Select 60 citizens in middle and old age (men 27, women 33) who do not take any exercises in Tianqiao District, Jinan City, excluding those who suffer from severe cardiovascular system and metabolic system chronic disease. These subjects are expected to do exercises 3-4 times every morning and for each time it lasts about 45 minutes, and no less than 4 days are scheduled to do so

weekly. Three months later, the subjects are to receive physiological index test.

B. Testing Index and Methods

1) *Testing Indexes.* Blood pressure; Finger Temperature; Vital Capacity.

2) *Test instrument.* Two sets of vital capacity tester produced by cosmed in Italy; CY.XJ11.300 sphygmomanometer of mercury table model made in Hospital Equipment Factory in Shanghai; two sets of stethophone; two sets of PW - 1A skin temperature biofeedback instrument.

3) *Test Methods.* On the testing day, the test participants, wearing soft bottom shoes, have a test on heart rate, blood pressure, finger temperature and vital capacity under a calm condition in a well-ventilated, spacious room before doing Health Qigong • Baduanjin or any other physical exercises. After finishing exercises, the participants will receive an immediate test on blood pressure, finger temperature and vital capacity.

4) *Statistical Approach.* Process data with the statistic software SPSS13.0 and then analyze the results with the paired T test method. The results can be marked with the format of “mean \pm standard deviation”, for example of “58.5 \pm 4.1”. $P < 0.05$ means it comes up to the significant level, while $P < 0.01$ indicates it comes up to the very significant level.

III. RESULTS AND ANALYSIS

A. Blood pressure changes before and after one time of eight trigrams boxing exercise.

TABLE 1: IMMEDIATE CHANGES IN BLOOD PRESSURE BEFORE AND AFTER THE EXPERIMENT (MALE)

	N	Systolic Pressure (mmHg)	Diastolic Pressure (mmHg)	Differential Pressure (mmHg)
Pre-experiment	27	130.00 \pm 16.70	80.18 \pm 12.21	49.81 \pm 10.42
Post-experiment	27	137.96 \pm 18.15 **	80.04 \pm 11.12	57.93 \pm 13.80**

PS: N stands for sample size, * for $P < 0.05$ (significant distinction), ** for $P < 0.01$ (very significant distinction).

TABLE 2: IMMEDIATE CHANGES IN BLOOD PRESSURE BEFORE AND AFTER THE EXPERIMENT(FEMALE)

	N	Systolic Pressure (mmHg)	Diastolic Pressure (mmHg)	Differential Pressure (mmHg)
Pre-experiment	33	126.85±20.46	81.97±12.56	44.88±14.69
Post-experiment	33	133.03±18.91*	80.18±9.17	52.84±16.22**

PS: N stands for sample size, * for P<0.05 (significant distinction), ** for P<0.01 (very significant distinction).

According to Table1 and Table 2, both the immediate systolic pressure and differential pressure of all the subjects rise after the experiment, and the distinction is significant; while the immediate diastolic pressure is on the decline with inconspicuous distinction.

With aging, there has been a series of physiological changes to the circulatory system of the elderly people: the artery wall is gradually to harden and thicken, the elastic storage function of the main artery and aorta weakens, the compliance of the blood vessel declines and the peripheral resistance is on the rise. All these changes lead to the increase of systolic pressure and pulse pressure and keep the diastolic pressure normal or a little lower.

The fact that the immediate systolic pressure increases after Baduanjin exercises may be related to stroke volume and aortic compliance. The rise of systolic pressure might well result from the augmentation of stroke volume. And the result that the systolic pressure and differential pressure do not rise a lot indicate that it needs not too much drive to promote blood flow and that the heart bears little burden. In this way, we can say Health Qigong • Baduanjin is an excellent way for the elderly people to keep fit. The mechanism of how the immediate diastolic pressure is on the decline can be as follows: during exercises, the blood vessels of skeletal muscle expand and the blood circulation and metabolism improve, which hence contributes to lowering blood pressure, especially the diastolic pressure. In a word, Health Qigong •Baduanjin exercises exert favorable effect on the elderly people's blood pressure.

B. Finger temperature changes before and after one time of eight trigrams boxing exercise

TABLE 3 FINGER TEMPERATURE CHANGES OF BOTH MALE AND FEMALE SUBJECTS (°C)

Indexes	Gender	Column number	Pre-experiment	Post-experiment
Finger temperature	Male	27	24.81±2.19	26.30±2.62*
	Female	23	24.40±2.17	25.91±2.35*

PS: N stands for sample size, * for P<0.05 (significant distinction), ** for P<0.01 (very significant distinction).

According to Table 3, after one time of Health Qigong • Baduanjin exercise, the finger temperature of both male and female subjects rises with significant distinction. Finger temperature is an index which can well reflect autonomic nervous system activities.

Abdominal respiration can make the finger temperature continue to rise, and skin temperature increase is related to cardiovascular reactivity which is inseparable from the activation of the autonomic nervous system. When the subjects are resting or in a relaxed state, the parasympathetic nervous system is dominant and at this moment the heart rate slackens and the stroke volume decreases. When they are in sustained attention, mental effort, or the body's stress response process, the tonic of the parasympathetic system is retrained, and the excitability of sympathetic nerve enhances, and there also comes up the acceleration of heart rate, the increase of stroke volume and the rise of blood pressure. Sympathetic nerve dominates the vascular smooth muscle, when the excitability of sympathetic nerve declines, the vascular smooth muscle of fingers relaxes, and then blood flow increases and finger temperature rises or vice versa. Consequently, as a relaxing training, Health Qigong •Baduanjin exercises help regulate autonomic function and reduce the excitability of sympathetic nerve, hence elevating the temperature.

IV. CONCLUSIONS

Firstly, the heart rate telemetry reflects that Health Qigong •Baduanjin plays a positive role in building up the elderly's health for its moderate intensity.

Secondly, Health Qigong •Baduanjin exercises is good for the middle-aged and elderly people to keep proper blood pressure.

Thirdly, Health Qigong •Baduanjin exercises contribute to promoting the blood circulation of the fingertip of the middle-aged and elderly.

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