

## **Experimental research on the effect of low and middle intensity shooting exercise on patients with hypertension in Aanning district of Lanzhou city.**

**Li Bin, Zhao Yongjian\***

School of Physics Education, Northwest Normal University, Lanzhou 730070, Gansu, PR China

### **Abstract**

**Objective:** To study the effect of low and middle intensity shooting on community patients with hypertension.

**Methods:** Research methods including literature, experiment, and mathematical statistics were used. 100 cases of patients with hypertension in multiple communities of Aanning district of Lanzhou city were selected for the research.

**Results:** Before the shooting exercise, the diastolic blood pressure and systolic pressure of the observation group showed no difference when compared with the control group, with  $P > 0.05$ ; after the shooting exercise, the diastolic blood pressure ( $80.01 \pm 7.05$  mmHg) and the systolic blood pressure ( $135.12 \pm 12.05$  mmHg) of the observation group were better than the control group, with  $P < 0.05$ ; and the satisfaction (92.00%) of patients with hypertension in the observation group was higher than the control group, with  $P < 0.05$ .

**Conclusion:** The effect of low and middle intensity shooting exercise on patients with hypertension is significant, with improving patients' diastolic blood pressure and systolic blood pressure, improving their satisfaction, and promoting faster rehabilitation of community patients with hypertension.

**Keywords:** Low and middle intensity, Shooting exercise, Community patients with hypertension, Rehabilitation effect.

*Accepted on September 18, 2017*

### **Introduction**

Studies have shown that hypertension is a major risk factor for renal vascular disease, cerebrovascular disease, and cardiovascular disease. Although medication can help control patients' blood pressure, the cost and side effects of the drugs could also bring a heavy economic and physical burden to the patients. The severity and morbidity of hypertension are closely related to the physical activity. Despite the fact that most of the clinical researchers recommend exercise as adjuvant therapy for hypertension, it is not widely used or emphasized [1]. Low and middle intensity shooting belongs to aerobic exercise. Studies have shown that long-term aerobic exercise can help improve cardio-pulmonary function, improve heart fat and nutrition metabolism, promote digestion, and eliminate brain fatigue and psychentonia, to enhance health and promote physical activity. However, the researches on the effect of long-term low and middle intensity shooting exercise on patients with hypertension are rare.

### **Research Object and Methods**

#### **Research object**

A total of 100 cases of community patients with hypertension in various communities including Lanfei, Yintanlu, Changfeng, and Anningbao in the Aanning district of Lanzhou city from

August 2015 to June 2016 were selected and randomly divided into observation group and control group. The control group was given routine exercise while the observation group was given shooting exercise on that basis.

**Observation group:** There were 25 cases of male and 25 cases of female. The age ranged from 50 to 65, with the average age of  $58.01 \pm 1.24$  years old.

**Control group:** There were 26 cases of male and 24 cases of female. The age ranged from 51 to 66, with the average age of  $59.11 \pm 1.18$  years old.

The information of patients from both groups showed no significant difference, with  $P > 0.05$ .

#### **Research methods**

**Experiment:** 100 cases of patients with hypertension were randomly divided into observation group and control group, with 50 cases in each group.

Patients in both groups were organized to participate in multiple community activities, including square dancing and Tai Chi. Patients were given routine exercise for 30 min each day. The exercise intensity was adjusted based on the bull's-eye rate of each patient. At the same time, a detailed exercise training record was kept for each patient for further analysis.

After the routine exercise, patients in the observation group were given low and middle intensity shooting exercise on each Monday, Wednesday, and Friday after 10 min rest and water drinking for 40 weeks.

The "5, 3, 2" method was adopted for the shooting exercise of the observation group. Patients in the observation group were divided into smaller groups of ten. Each group used one basket for shooting exercise, with the following requirements: The forces of arms and legs should be balanced. The basketball was placed in front of the chest and pulled out as possible with extended arms, including the penalty shot, ground catch and shoot, and catch and shoot. The rules included: 1) for the first one, 2 scores for backboard touch, 3 scores for basket touch, and 5 scores for field-goal; for the second one, 3 scores for field-goal; and for the third one, 2 scores for field-goal; 2) the second one failed if the ball touched the ground and the third one failed if the ball did not touch the ground; and 3) anyone who won 21 scores wins.

**Blood pressure measurement:** Before the training, all patients took three times blood pressure measurements and the average value was regarded as the baseline. During the training, the patients' blood pressure was measured by the community hospital and recorded in the training record.

**Physical fitness test:** The patient's lung volume, weight, and height were tested before and after the exercise.

**Table 1.** Comparison of diastolic pressure and systolic pressure of both groups.

Group	No. of cases	Diastolic Pressure (mmHg)		Systolic Pressure (mmHg)	
		Before Exercise	After Exercise	Before Exercise	After Exercise
Observation group	50	85.20 ± 10.85	80.01 ± 7.05	145.21 ± 17.35	135.12 ± 12.05
Control group	50	84.92 ± 10.72	84.12 ± 8.45	146.25 ± 19.75	140.45 ± 18.15

Note: The observation group and the control group were compared, with  $P < 0.05$ .

### Comparison of satisfaction

After the exercise, 40 cases in the observation were satisfied, 6 cases were generally satisfied, and 4 cases were not satisfied,

**Table 2.** Comparison of satisfaction of both groups after the exercise.

Group	Number of Cases (n)	Satisfied (n)	Generally Satisfied (n)	Not Satisfied (n)	Satisfaction (n; %)
Observation group	50	40	6	4	46 (92.00)
Control group	50	30	5	15	35 (70.00)

Note: The observation group and the control group were compared, with  $P < 0.05$ .

### Discussion

Studies have shown that the increasing incidence of hypertension mainly includes the increasing of diastolic pressure or systolic pressure, with clinical syndrome of organic lesion or kidney, brain, or heart function damage. As a common chronic disease, it is also the main cause of

**Observation indicators:** The diastolic pressure, systolic pressure, and satisfaction of patients after the exercise were compared.

### Mathematical statistics

SPSS22.0 was used in this research for the statistics of the diastolic pressure, systolic pressure, and satisfaction of patients in both groups. T test was adopted for the diastolic pressure and systolic pressure.  $\chi^2$  test was adopted for satisfaction.  $P < 0.05$  means that there was statistically significant difference of the diastolic pressure, systolic pressure, and satisfaction between patients in both groups.

### Test Results and Analysis

#### Comparison of diastolic pressure and systolic pressure

Before the exercise, the diastolic blood pressure and systolic pressure of the observation group showed no difference when compared with the control group, with  $P > 0.05$ . After the exercise, the diastolic pressure ( $80.01 \pm 7.05$  mmHg) and the systolic pressure ( $135.12 \pm 12.05$  mmHg) of the observation group were better than the diastolic pressure ( $84.12 \pm 8.45$  mmHg) and the systolic pressure ( $140.45 \pm 18.15$  mmHg) of the control group, with  $P < 0.05$ , as is shown in Table 1.

with satisfaction of 92.00%. The result was higher than the control group, with  $P < 0.05$ , as is shown in Table 2.

cerebrovascular disease. Normally, the blood pressure fluctuates with the internal and external environment and increases along with the age, with systolic pressure the most obvious in the change. However, after 50 years old, the diastolic pressure will decline, with the pulse pressure increases accordingly [2]. In recent years, we can take targeted measures to patients after the continuous in-depth study on the

risk factors of cardiovascular disease. 24 h long-acting antihypertensive drugs will be used on the basis of improving the life style of patients. Besides, blood pressure management, monitoring, and control should be focused to prevent cardiovascular disease [3].

Since 2010, low and middle intensity exercise has attracted attention in clinical treatment. With the development of exercise treatment of hypertension, more and more studies have shown that the failure of hypertension treatment is mostly caused by excessive intensity of exercise. On the other hand, middle intensity exercise has better effect of reducing blood pressure. At the same time, low and middle intensity of exercise is flexible, without requiring too much medical care. It can effectively reduce patients' economic burden, prevent the potential risks in the cardiovascular, joint, and bone system, thus contributes to a better exercise compliance [4,5].

In this research, the diastolic pressure and systolic pressure of the observation group improved significant after the exercise, which proved the effect of the low and middle intensity shooting exercise. In clinical practice, some scholars believe that the effect of exercise on hypertension works through reducing weight [6]. However, recent research shows that exercise can help change physical quality, including pressure decline. That is to say, weight loss and blood pressure decline can be independent results. Although many studies did not involve the interaction between the reducing of hypertension drugs and exercise therapy, most of them required patients to stop use antihypertensive medications during the studies. Out of respect for further research or the actual operation, this research did not require stopping medication. Before the exercise, patients in the observation group and the control group all took antihypertensive drugs, and without any adverse reaction during the intervention. As is shown in the clinical record, 4 patients stopped antihypertensive drugs during the exercise, while 2 patients reduced the dosage during the exercise. Due to the differences of antihypertensive drugs dosage and kinds, it is shown in the research that exercise therapy can not only control patients' diastolic and systolic pressure, but also reduce their medical costs [7,8]. Low and middle intensity shooting exercise can help improve patients' diastolic pressure and systolic pressure, develop their physical quality, and promote faster rehabilitation, which make it the first choice of treatment for community patients with hypertension [9,10].

The result shows that, before the exercise, there was no significant difference of the diastolic pressure and systolic pressure between the observation group and the control group, with  $P > 0.05$ . After the exercise, the diastolic pressure ( $80.01 \pm 7.05$  mmHg) and the systolic pressure ( $135.12 \pm 12.05$  mmHg) of the observation group were better than the control group, with  $P < 0.05$ . After the exercise, 40 cases in the observation group were satisfied, 6 cases were generally satisfied, and 4 cases were not satisfied. The satisfaction of the observation was 92.00%, which was higher than the control group, with  $P < 0.05$ .

The effect of low and middle intensity shooting exercise on patients with hypertension is significant, with improving patients' diastolic blood pressure and systolic blood pressure, improving their satisfaction, and promoting faster rehabilitation of community patients with hypertension, which is worth further application and promotion.

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## \*Correspondence to

Zhao Yongjian  
School of Physics Education  
Northwest Normal University  
PR China