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Effects Of A 10-Week Qigong Exercise Programme on Systolic and Diastolic Blood Pressure of Male Hypertensive Members of Recreation Clubs in Owerri Municipal Council of Imo State

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Abstract

The purpose of this study was to determine the effects of a 10-week qigong exercise programme on resting systolic and diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State. The study was guided by two research questions and two corresponding null hypotheses. The study adopted randomized pretest – posttest control group design. In this multivariable trials; 144 male hypertensive members constituted the population of the study, and 40 volunteers were used as the sample size of the study. The instrument used for the study was Sphygmomanometer model DM-500 for blood pressure. The instrument is a standardized health instrument. Five qigong exercises; Pulling toes with both hands, Turning head to look over the shoulder, Shooting arrow on horseback, Respiration in bending position and Breathing in side-lunge position while raising arm were administered in accordance with exercise training phases. The data collected were analyzed using mean and standard deviation to answer the research questions while the Analysis of Covariance (ANCOVA) was used to test the research hypotheses at 0.05 level of significance. After the successful 10-week qigong exercise programme on male hypertensive, the findings of this study revealed that the qigong exercise programme reduced resting systolic blood pressure and resting diastolic blood pressure of male hypertensive members of Recreation Clubs from 138.95 to 114.21 with a mean difference of 24.74 mmHg and 97.89 to 84.74 with a mean difference of 13.15 mmHg respectively. The hypotheses that there are no significant effect of a 10-week qigong exercise programme on the resting systolic blood pressure and resting diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State were rejected ($p < 0.05$). Based on the findings, the researcher made some vital recommendations among others that: qigong exercise, being an active and acceptable form of physical activity for hypertensive patients, should be incorporated into strategies for the improvement of cardio-respiratory fitness and reduction of possible development of any form of/or more cardiovascular diseases and suggested areas for further research.

Keywords

Qigong exercise programme, resting systolic blood pressure, resting diastolic blood pressure, male hypertensive members, Recreation Clubs.

1. Introduction

The physiological variables in human being such as systolic blood pressure and diastolic blood pressure when above or below normal readings may lead to health related issues such as hypertension, stroke, kidney malfunction, or even death.

Blood Pressure (BP) is the weight of circulating blood on the dividers of blood vessels. Utilized without encourage detail, "blood pressure" more often than not alludes to the weight in expansive courses of the systemic circulation. Blood pressure is as a rule communicated in terms of the systolic weight (most extreme amid one heart beat) over diastolic pressure (least in between two heart beats) and is measured in millimeters of mercury (mmHg), over the encompassing barometrical weight (considered to be zero for comfort). Normal resting blood pressure in an adult is approximately 120 millimetres of mercury (16 kPa) systolic, and 80 millimetres of mercury (11 kPa) diastolic, truncated "120/80 mmHg" according to Ogedegbe and Pickering (2010). The systolic blood pressure is the weight in the blood vessel when the heart beats. A normal systolic blood pressure is 120 mmHg and a reading of 140mmHg and above means that the systolic blood pressure is high (Appel, Brands, Daniels, Karanja, Elmer, & Sacks (2013). The diastolic blood pressure appears how much pressure blood is applying against the blood vessel dividers whereas the heart is resting between beats. A normal diastolic blood pressure of a person is 80 mmHg, and when above or below can lead to health related issues. Standard physical action makes ones heart more grounded. A more grounded heart can pump more blood with less exertion (AskMayoExpert, 2014). Getting to be more dynamic can lower the systolic blood pressure - the beat number in a blood weight perusing - by a normal of 4 to 9 millimeters of mercury (mm Hg). For a few individuals, getting a few works out is sufficient to diminish the requirement for blood weight medicine. In case ones blood weight is at an alluring level - less than 120/80 mm Hg - work out can offer assistance anticipate it from rising as one age. Normal work out too makes a difference one keep up a sound weight - another imperative way to control blood weight. But to keep your blood weight moo, one has to keep working out on a customary premise. It takes almost one to three months for standard work out to have an effect on ones blood weight. The benefits final as it were as long as one proceeds to work out. Weightlifting can too have long-term benefits to blood weight that exceed the chance of a brief spike for most individuals (AskMayoExpert, 2014).

Hypertension also known as high blood pressure is one of the major global health problems. It has a strong association with expanded hazard of coronary course malady, myocardial dead tissue, kidney infection, stroke and death. Blood pressure is the weight of blood against the internal dividers of the blood vessel, changing totally different parts of the body amid diverse stages of withdrawal of the heart and beneath diverse conditions of wellbeing. When the blood pressure is chemically elevated above optimal levels > $\frac{120}{80}$ mmHg (millimeters of mercury), this condition is known as hypertension.

According to Xiong, Wang, Li, and Zhang (2015) for patients not as of now experiencing treatment with antihypertensive drugs, hypertension is characterized by systolic blood pressure (SBP)>120 mmHg and/or diastolic blood pressure (DBP) mmHg >80 mmHg on atleast two isolated interims after a 4-week be careful period.

It is estimated that about 1.13 billion people globally are living with hypertension (Mills, Bundy, Kelly, Reed, Kearney & He, 2016). This has made Hypertension an emerging challenge all over the world. It has extreme affect on the quality of life conjointly expanded the hazard of heart infection, stroke and passing. Hypertension is regarded as one of the foremost common cardiovascular illnesses around the world with an expanding frequency among teenagers and grown-ups. There are many evidence-based hypertension therapeutic regimens. Xiong, et al (2015), mentioned some of them as: a sound count calories, weight control, standard work out, and fitting beginning and supplementary antihypertensive treatment.

Exercise is physical movement that's arranged, organized, monotonous which improves the quality of physical wellness and by and large wellbeing and wellness (Kylasov & Gavrov, 2011). It is carried out for different reasons, enhancing development and advancement, avoiding maturing, reinforcing muscles and the cardiovascular framework, sharpening athletic abilities, weight misfortune or

upkeep, making strides wellbeing conjointly for satisfaction. Numerous individuals prefer exercising outdoors so as to congregate in groups, socialize, and improve the quality of well-being (Bergstrom, Muse, Tsai, & Strangio, 2016).

According to National Institutes of Health, National Heart, Lung, and Blood Institute (2006), Physical exercises are categorized by and large into three sorts based on the impact it has on human body, and these are Oxygen consuming work out (any physical action that produces utilize of expansive muscle bunches and causes the body to utilize more oxygen than it would while resting), Anaerobic work out (this will firm, tone, and fortify muscles, as well as improve bone quality, adjust, and coordination), and Adaptability works out (stretch and extend muscles).

There are many kinds of exercises under these three types, which are; walking, running, tennis, basket ball, dancing, cycling, hatha-yoga, Qigong, among others. Exercise physiologists recognize that physical exercise has impact on hazard components of coronary heart infection. According to Igbanugo and Agha (1995), there is a form of oriental exercise known as Hatha-Yoga which considerably reduces blood pressure within a short time. They pointed out that the Pranayama or breath control aspect of Hatha-Yoga appears to be the catalyst in this phenomenon. Currently, there are divergent interests in complementary and alternative medicine (CAM) approaches for lowering blood pressure other than the vast armamentarium of antihypertensive drugs available to clinicians. Some of these complementary and alternative medicine approaches are regarded as traditional therapies, such as, Qigong, Yoga, Taichi, Pilates and Reiki which have positively lowered blood pressure and relieved hypertension related symptoms with fewer adverse effects (Liu, and Qiang; 2013). These therapeutic exercises when properly planned can take place in Recreation Clubs for recreation purposes.

Recreation Club is a place where activities are undertaken at free hours and after-work without compulsion (Ntan, 2014). Participation in recreation activities may be passive (spectator) or active (sports and fitness). Recreational activity or experience carried out in recreation clubs is chosen voluntarily either since of fulfillment, delight or inventive enhancement determined or seen individual or social values to be picked up. These activities refresh the mind and body after work and enhance relaxation. Some people view membership of recreation club as a social instrument because of its contribution to the society. The major personal benefit of recreating in a recreation club is meeting physical, emotional, social and other health-related needs of the participants. The health benefits of recreation include reducing risk of chronic diseases like hypertension, diabetes, cancer, obesity etc through planned physical activities. Recreational activities such as tennis, table tennis, squash, dart, especially Qigong etc when properly selected and practiced increase life expectancy (Hammer, 2006).

The term qiqong (pronounced “chee kung”) is derived from two Chinese words “qi” meaning life energy and “gong” meaning to cultivate. Qigong is therefore to cultivate life energy. Qigong is recognized as portion of China’s social legacy conjointly one of its national treasures. Qigong is regarded as one modality of traditional Chinese medicine (TCM) and it is also believed to be at least 5,000 years old. It is an art of body-mind practice, by adjusting the body, breath and intellect to adjust or initiate physiological capacities of the body (Liu & Qiang, 2013). The science of qigong is based on the axon that the intellect has the capacity to coordinate qi. In qigong exercise one learns how to go inside his/her body with the mind, feel what is there and also direct ones qi where it needs to go. Qigong deep breath allows the diaphragm to drop downward, the rib cage to expand and creates more space for the lungs to inflate. It also increases the oxygen fluid into the body, slows down heart pace and creates feelings of calmness and relaxation in the body. Due to its critical advancement of human wellbeing and ease of learning, qigong exercise is suitable for people of all ages or physical conditions. In the past decades, numerous studies globally have evaluated the adequacy of qigong exercise on human health. Recent studies show that medically, qigong is effective in treating disease like hypertension (Xiong, et al; 2015, Wang, Chan & Ho; 2014 and James, Oparil & Carter; 2014). Hence, if the medical qigong is effectively examined, it will serve as a curative measure to hypertensive patients owing to the total number of male hypertensive members in Recreation Clubs in Owerri Municipal Council of Imo State.

2. Statement of the Problem

The incidence of hypertension around the world is rising at an incredible rate as the lives of people become more complex and stressful. Hypertension has become a common condition within the common populace and it remains the number one hazard figure for cardiovascular infection and stroke around the world. Numerous individuals live with hypertension undetected, and live with this lifted blood weight for a long time some time recently it is analyzed. Blood weight regularly rises and falls all through the day, and it can cause wellbeing issues in the event that it remains tall for a long time.

The increasing levels of hypertension all over the world and its predominance cannot be disregarded or taken as an individual's issue. Tall blood weight can cause harm to the human wellbeing in so numerous ways. When the physiological factors such as heart rate, systolic and diastolic blood weight, imperative lung capacity, and respiratory rate values are irregular, they can cause harms to a few imperative organs within the human body just, like the heart, kidney, lungs, brain and liver.

Qigong is one of the Chinese exercises that have beneficial influence in the treatment of hypertension on patients (Chang, 2015). It has been claimed that these exercises can foster health and improve the quality of life (Agha, 1998). Qigong exercises are considered to be safe when practiced in moderation and it is good for people of all ages. Qigong has been widely used in therapeutic settings either as a sole therapeutic technique or as an adjunct to other forms of treatment and has shown clinical effects in the treatment of chronic disease such as hypertension (Agha, 1998).

People register with recreation clubs to relax and engage in activities that promote their health, and prevent life-threatening condition like high blood pressure. Owerri Municipal Council has Recreation Clubs with members. In these Clubs, members voluntarily participate in some activities to promote health. Some of these members have high blood pressure despite participation in the Clubs' activities. However, it is observed that qigong exercises widely used in therapeutic settings is not part of activities in these Clubs. So the question is: what is the effect of a 10-week qigong exercise programme on resting systolic and resting diastolic blood pressure of male hypertensive members of recreation clubs in Owerri Municipal Council of Imo State?

3. Purpose of the Study

The most reason of this study is to look at the effects of a 10-week qigong exercise programme on systolic and diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State. The study specifically sought to ascertain the effects of a 10-week qigong exercise on:

1. resting systolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council;
2. resting diastolic blood pressure of male hypertensive members of Recreation Club in Owerri Municipal Council

4. Research Questions

These research questions guided the study:

1. What is the effect of a 10-week qigong exercise on the resting systolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State?
2. What is the effect of a 10-week qigong exercise on the resting diastolic blood pressure of male hypertensive members of Recreation Club?

5. Research Hypotheses

At 0.05 level of significance, these null hypotheses were tested

H_{02}: There is no significant effect of a 10-week qigong exercise programme on the resting systolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State.

H_{03}: There is no significant effect of a 10-week qigong exercise programme on the resting diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State.

6. Literature Review

He, Wei, and Can (2018) worked on the effects of 12-week brisk walking training on exercise blood pressure in elderly patients with essential hypertension: a pilot study. Patients with essential hypertension were recruited from the Baoshan Community Health Service Center. A total of 46 patients were finally selected and randomly assigned into two groups: control group (CON) included patients who did not participate in exercise intervention training; treatment group (TRG) included patients who participated in 12-week brisk walking training (60-min of brisk walking, three times a week for a total of 12 weeks). 3-minute step tests of low and high intensity were conducted pre- and post-intervention. To compare the effects of exercise intervention, 23 subjects with normal blood pressure (NBP) who did not participate in 12-week brisk walking training, were recruited. The result of the study revealed that after 12 weeks of brisk walking, SBP of TRG during resting, low and high-intensity exercise was significantly reduced by 8.3mmHg, 15.6mmHg, and 22.6mmHg, respectively; while HR of TRG's during resting, low and high intensity was significantly reduced by 3.6beats/minute, 8.7beats/minute and 11.3beats/minute, respectively. Meanwhile, after 12 weeks of brisk walking, TRG's steps per day, moderate physical activity time and physical activity energy expenditure significantly increased by 6000 steps, 2.4 ml/kg/m, 40 minutes and 113 kcal, respectively. At the same time, TRG's body fat rate and sedentary time significantly reduced by 2% and 60 minutes per day. The study concluded that brisk walking can reduce the magnitude of BP rise during exercise of different intensities and may be reduced the risk of acute cardiovascular incidents in elderly patients with essential hypertension.

Min, Soo, Jidong, & Kyung (2018) researched on higher blood pressure during light exercise is associated with increased left ventricular mass index in normotensive subjects. According to the authors, an exaggerated blood pressure response during an exercise test reflects a future risk of hypertension and is related to increased left ventricular mass (LVM) in hypertensive patients. However, whether this relationship exists in normotensive subjects is not known. We enrolled 7923 health normotensive screening volunteers. Systolic blood pressure (SBP) at stage 1 of the exercise test was used as an indicator of the exercise BP response. Two-dimensional echocardiography was used to obtain the LVM index. Exercise SBP was significantly correlated with the LVM index ($r = 0.11$, $P < 0.001$). Higher exercise SBP at stage 1 was associated with an increased LVM index after adjusting for age, sex, body mass index, hemoglobin, SBP at rest, and peak oxygen consumption ($P < 0.001$). Higher SBP during low-intensity exercise was associated with an increased LVM index in normotensive subjects.

Carpio-Rivera, Moncada-Jiménez, Salazar-Rojas, Solera-Herrera and Cardiol (2016) worked on acute effects of exercise on blood pressure: A meta-analytic investigation. The purpose of the study was to examine the evidence regarding the acute effect of exercise on blood pressure (BP) using meta-analytic measures. Sixty-five studies were compared using effect sizes (ES), and heterogeneity and Z tests to determine whether the ES were different from zero. The mean corrected global ES for exercise conditions were -0.56 (-4.80 mmHg) for systolic BP (sBP) and -0.44 (-3.19 mmHg) for diastolic BP (dBP; $z \neq 0$ for all; $p < 0.05$). The reduction in BP was significant regardless of the participant's initial BP level, gender, physical activity level, antihypertensive drug intake, type of BP measurement, time of day in which the BP was measured, type of exercise performed, and exercise training program ($p < 0.05$ for all). ANOVA tests revealed that BP reductions were greater if participants were males, not receiving antihypertensive medication, physically active, and if the exercise performed was jogging. A significant inverse correlation was found between age and BP ES, body mass index (BMI) and sBP ES,

duration of the exercise's session and sBP ES, and between the number of sets performed in the resistance exercise program and sBP ES ($p < 0.05$). Regardless of the characteristics of the participants and exercise, there was a reduction in BP in the hours following an exercise session. Thus, the hypertensive effect was greater when the exercise was performed as a preventive strategy in those physically active and without antihypertensive medication.

Zeigler, Votaw, Dreos, Durnil, Terran, Akin, and Nordin (2018) worked on the impact of daily exercise compared to exercise on alternating days on post-exercise blood pressure reduction in men with elevated blood pressure. The purpose of the study was to compare daily exercise (DE) to exercise performed on alternating days (AE) and control (CON) on PEH. Sedentary men 18-30 yr with elevated blood pressure (BP) participated in this three-arm randomized cross-over trial. The primary comparison was PEH between three groups (CON, AE, DE) over time (day 1, 2, 3). Both exercise groups were prescribed the same exercise intensity (70-75%HRmax), and total duration of exercise (90min) on a cycle ergometer. DE performed exercise on three consecutive days (three bouts 30min). AE performed exercise on two alternating days (2 bouts 45min). Following exercise subjects remained in the laboratory for 1-h while BP was taken every 5-min. The result of the study revealed that nine overweight (BMI=29.2±4.5kg/m^2), young (22.7±2.4years), moderately fit (VO2peak=35.6±7.3 ml.kg.min), male subjects with elevated BP (126.2±10.4 and 73.3±6.4 mmHg) completed the study. There was a significant systolic BP condition by day effect such that on day three systolic BP (CON 119.0±9.3, AE 118.9±15.0, DE 115.0±11.9 mmHg), and diastolic BP (CON 71.9±6.6, AE 68.4±10.3, DE 67.6±6.2 mmHg) were lowest during the post-exercise DE condition ($p<0.001$). Additionally, DE saw a significant reduction of resting systolic BP between day 1 and day 4 (122.8±10.2 mmHg vs 113.1±12.0 mmHg; $p=0.022$, respectively) and a borderline significant reduction between day 1 and day 3 (122.8±10.2 mmHg vs 114.8±10.0 mmHg; $p=0.051$, respectively). DE saw a borderline significant resting diastolic BP reduction between day 1 and day 3 (73.2±7.2 mmHg vs 68.6±6.5 mmHg; $p=0.058$, respectively) and a significant reduction between day 1 and day 4 (73.2±7.2 mmHg vs 66.4±4.3 mmHg; $p=0.022$, respectively).

7. Research Design

The researcher employed randomized pretest- posttest control group design. It is an efficient technique for assessing the impact of an intervention on two-randomized groups (Treatment and control) and also decreases chances of confounding variables. It is commonly employed in studies relating to behavioural sciences. The advantage of such a design is that it is simple and randomizes the differences among the sample items (Kothari & Garg, 2014). The use of control group helps to discount many alternative explanations for the effect of treatments. The pre-test post-test control group design also known as the classic controlled experimental design involves both a treatment and a control group (Thomas, Nelson & Silverman, 2015). Hence, this design was employed because when a control group is used, any changes observed post-test will be attributed only to the effect of the Qigong exercise training program.

8. Population and Sampling Technique of the Study

The populace of the work comprised of all male members of Recreation Clubs in Owerri Municipal Council that are hypertensive. The Recreation Clubs in Owerri Municipal Council of Imo State have a total of 144 male hypertensive members (Recreation Club Record, 2018).

The sample size for this study is made up of 40 male volunteers who are hypertensive members from the Recreation Clubs in Owerri Municipal Council of Imo State. They each signed a Physical Activity Readiness Questionnaire (PAR-Q) after they had been briefed on the nature of the Qigong exercises. They were randomly assigned to the control and experimental groups (20 subjects each) using balloting without replacement.

9. Method of Data Analysis

The data were analyzed in respect to each research question with corresponding hypothesis. The following statistical tools: mean and standard deviation were utilized in tackling the research questions while Analysis of Covariance (ANCOVA) was employed in testing the hypotheses at 5% level of significance.

10. Results

Research Question 1

What is the effect of a 10-week qigong exercise on the resting systolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State?

Table 1: Descriptive Analysis for Resting Systolic Blood Pressure (N = 37)

Test	N	$\bar{x}$	SD	MD
Pre-test	19	138.95	8.09	24.74
Post-test		114.21	10.17	

Key: N = Number of Participants, $\bar{x}$ Mean, SD = Standard Deviation, MD = Mean Difference

Table 1 shows the result obtained in respect of research question two. The result reveals that the mean and standard deviation of the treatment group for resting systolic blood pressure before the treatment is 138.95 ± 8.09, and is 114.21 ± 10.17 after treatment, with a mean deviation of 24.74. This observation shows that there is an effect on the systolic blood pressure after the 10-week qigong exercise programme with a reduction of 24.74 mmHg.

Testing of Hypothesis One

There is no significant effect of a 10-week qigong exercise programme on the resting systolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State.

Table 2: ANCOVA Summary on the Effect of Qigong Exercise on Resting Systolic Blood Pressure (N = 37)

Source	Type III Sum of Squares	Df	Mean Square	f	Sig.
Corrected Model	5642.806[a]	3	1880.935	48.435	.000*
Intercept	172.436	1	172.436	4.440	.043*
Group	188.404	1	188.404	4.852	.035*
Pretest	825.004	1	825.004	21.244	.000*
Group * Pretest	102.299	1	102.299	2.634	.114
Error	1281.518	33	38.834		
Total	586300.000	37			
Corrected Total	6924.324	36			

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Intercept	172.436	1	172.436	4.440	.043*
Group	188.404	1	188.404	4.852	.035*
Pretest	825.004	1	825.004	21.244	.000*
Group * Pretest	102.299	1	102.299	2.634	.114
Error	1281.518	33	38.834		
Total	586300.000	37			

*Significant ($p < 0.05$)

The result in Table 2 shows that the mean squares of 1880.935 for between group and 38.834 for within group, F-calculation value of 48.435 and a p-value of 0.035which is less than 0.05. This indicates statistically significant result. Therefore, the null hypothesis which stated that there is no significant effect of a 10-week qigong exercise programme on the resting systolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State is rejected.

Research Question 2

What is the effect of a 10-week qigong exercise on the resting diastolic blood pressure of male hypertensive members of Recreation Club?

Table 3: Descriptive Analysis for Resting Diastolic Blood Pressure (N = 37)

Test	N	$\bar{x}$	SD	MD
Pre-test	19	97.89	7.87	13.15
Post-test		84.74	5.13	

Key: N = Number of Participants, $\bar{x}$ Mean, SD = Standard Deviation, MD = Mean Difference

Table 3 shows the result obtained in respect of research question three. The result reveals that the mean and standard deviation of the treatment group for resting diastolic blood pressure before the treatment is 97.89 ± 7.87, and is 84.74 ± 5.13 after treatment, with a mean deviation of 13.15. This observation shows that there is an effect on the diastolic blood pressure after the 10-week qigong exercise programme with a reduction of 13.15 mmHg.

Testing of Hypothesis Two

There is no significant effect of a 10-week qigong exercise programme on the resting diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State.

Table 4: ANCOVA Summary on the Effect of Qigong Exercise on Diastolic Systolic Blood Pressure (N = 37)

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	f	Sig.
Corrected Model	680.979[a]	3	226.993	46.164	.000*
Intercept	27.319	1	27.319	5.556	.025*
Group	27.319	1	27.319	5.556	.025*
Pretest	477.042	1	477.042	97.017	.000*
Group * Pretest	45.443	1	45.443	9.242	.005*
Error	162.264	33	4.917		
Total	277600.000	37			
Corrected Total	843.243	36			

*Significant ($p < 0.05$)

The result in Table 4 shows that the mean squares of 226.993 for between group and 4.917 for within group, F-calculation value of 46.164 and a p-value of 0.025 which is less than 0.05. This indicates statistically significant result. Therefore, the null hypothesis which stated that there is no significant effect of a 10-week qigong exercise programme on the resting diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State is rejected.

11. Summary of the Findings

The objective of this study was to determine the effects of a 10-week qigong exercise programme on systolic and diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State. After the successful 10-week qigong exercise programme on male hypertensive, the findings of this study revealed that the programme reduced systolic blood pressure of male hypertensive members of Recreation Clubs from 138.95 to 114.21 with a mean difference of 24.74 mmHg. The hypothesis that there is no significant effect of a 10-week qigong exercise programme on the resting systolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State is rejected ($p< 0.05$). The study showed that the programme reduced diastolic blood pressure of male hypertensive members of Recreation Clubs from 97.89 to 84.74 with a mean difference of 13.15 mmHg. The hypothesis that there is no significant effect of a 10-week qigong exercise programme on the resting diastolic blood pressure of male hypertensive members of Recreation Clubs in Owerri Municipal Council of Imo State is rejected ($p< 0.05$).

12. Conclusion

In conclusion, the study revealed that the effect of a 10-week qigong exercise programme on systolic and diastolic blood pressure of male hypertensive members of recreation clubs in Owerri Municipal Council of Imo State significantly decreased both systolic and diastolic blood pressure.

There was a significant difference between the mean post-test systolic blood pressure and diastolic blood pressure of the subjects in both the Experimental and Control Groups in the 10-week Qigong exercise. There was no significant difference between the pre-test mean resting systolic blood pressure of the subjects in the Experimental and Control Groups in the 10-week Qigong exercise

program, while there was a significant difference between the pre-test mean diastolic blood pressure in the Experimental and Control Groups in the 10-week Qigong exercise program. There is a great decrease from a mean resting systolic blood pressure and diastolic blood pressure of 138.947 ± 8.093 and 97.895 ± 7.873 before the 10-week Qigong exercise to a mean value of 114.211 ± 10.174 and 84.737 ± 5.130 respectively after the 10-week Qigong exercise. All these decrease are statistically significant at ($p = 0.000$).

13. Recommendations

The results of this study and the findings of previous research study on this matter have been encouraging. This study has really shown the positive effect on systolic and diastolic blood pressure after a 10-week qigong exercise programme in managing male hypertensive members of Recreation clubs. Based on these findings, the following recommendations were made:

1. That qigong exercise, being an active and acceptable form of physical activity for hypertensive patients, should be incorporated into strategies for the improvement of cardio-respiratory fitness and reduction of possible development of any form of/or more cardiovascular diseases.
2. Knowing the effectiveness of regular progressive qigong exercise training as a prophylactic or curative measure in managing many health conditions, especially in the management of hypertension, concerted efforts should be made by governments, school authorities, healthcare institutions and non-governmental organizations (NGOs) in creating more awareness on the need for people to be more active and avoid sedentary lifestyle. With many jobs affording less physical stress, physical activity outside work is very important.
3. Corporate bodies and other such large industrial establishments should sponsor seminars or workshops on fitness and health, to educate their executives on the role of exercise in ensuring fitness and enhancing productivity. Qigong should be one of the exercises to be discussed at such seminars or workshops.
4. Further studies should be conducted to confirm the claims of Chinese researchers regarding the effectiveness of Qigong exercises in the prevention, management or cure of diseases other than hypertension.

14. Suggestions for Further Studies

1. The researcher is suggesting that further studies should be carried out using some other exercises and qigong exercise on the sample variables to find out the rate of effectiveness of each on hypertensive adults.
2. Further studies also should be conducted using qigong exercise and dieting to find out the impact on the same risk factors of hypertension.
3. In this study, a population size of 37 was quite small; therefore, further studies are suggested using a larger population size, the same training modes and variables.

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