

Effect Of Zumba Dance On Blood Pressure

S.Jitesh

BDS Student(1st year)
saveetha dental college and hospitals
162,p.h road,chennai,Tamil nadu - 600077

Gayatri Devi

Lecturer
saveetha dental college and hospitals
162 p.h road,chennai,Tamil nadu - 600077

Abstract:

Aim - To know the effect of Zumba dance on blood pressure

Objective- To verify how blood pressure is altered by Zumba dance among hypertensive patients

Background-High blood pressure is a major risk factor for stroke, coronary heart disease, congestive heart failure and end stage renal disease. Hypertension is generally treated by antihypertensive drugs which shows significant reduction in blood pressure. The best types of exercise for lowering blood pressure include walking, jogging, cycling, swimming, dancing, Zumba dance.

Zumba is a dance fitness program created by Colombian dancer and choreographer Alberto "Beto" Perez during the 1990s. Zumba involves dance and aerobic elements combine high energy and motivating music with unique moves and combinations. Zumba is a great way to lose weight and build muscle. Zumba can help lower your risk of heart disease, reduce your blood pressure and bad cholesterol, and boost your good cholesterol

Method-For the study 30 volunteers who were suffering from hypertension were selected under the inclusive factors. Their blood pressure were measured using automatic blood pressure monitor. The volunteers were made to practice zumba dance for 2 months and the variation in the blood pressure were evaluated.

Result- On analyzing of the obtained data it was observed that zumba dance have significantly reduce blood pressure in hypertensive patients

Reason - Exercises for the treatment and prevention of hypertension has increased, one of the most common exercise is Zumba dance. So this study is done to know the effect of Zumba dance on blood pressure in hypertensive patients

Keyword-Blood pressure, hypertensive, Zumba dance

INTRODUCTION

Zumba is a dance fitness program created by Colombian dancer and choreographer Alberto "Beto" Perez during the 1990s. It is an extremely wide-spread Latin-inspired dance exercise program that started in 2001 and has been gaining rapidly in popularity. Its motto is "Ditch the workout. Join the Party"^[1,2]. An estimated 14 million people have participated in Zumba in over 150 countries. There are a wide variety of Zumba classes targeting specific participant groups, including children and elderly persons^[1,2]. It involves dance and aerobic movements performed to energetic music. The goals of Zumba are for participants to improve strength, balance, coordination, and cardiovascular endurance^[1,2].

The choreography incorporates hiphop, soca, samba, salsa, merengue and mambo. Squats and lunges are also included.^[3] Approximately 15 million people take weekly Zumba classes in over 200,000 locations across 180 countries^[4]. Zumba classes are typically about an hour long and are taught by instructors licensed by Zumba Fitness, LLC. The exercises include music with fast and slow rhythms, as well as resistance training. The music comes from the following dance styles: cumbia, salsa, merengue, mambo, flamenco, chachacha, reggaeton, soca, samba, hip hop music, axé music and tango. There are nine different types of classes for different levels of age and

exertion^[4]. Zumba Gold is a program designed for the needs of the elderly. Zumba Step is a lower-body workout that incorporates Zumba routines and step aerobics with Latin dance rhythms. Rumba Toning is for the people who do their workouts with toning sticks. Zumba Toning will target the abs, thighs, arms, and other muscles throughout the body. Zumba Toning provides participants with a cardio workout and strength training.

Blood pressure (BP) is the pressure exerted by circulating blood upon the walls of blood vessels. Blood pressure is expressed by two measurements, the systolic pressure and diastolic pressure, which are the maximum and minimum pressures, respectively. Normal blood pressure for adults is defined as a systolic pressure below 120 mmHg and a diastolic pressure below 80 mmHg. It is normal for blood pressures to change when you sleep, wake up, or are excited or nervous. When they are active, it is normal blood to increase the BP. Blood pressure normally rises with age and body size. Newborn babies often have very low blood pressure that are considered normal for babies, while older teens have similar range of BP to adults. The abnormal blood pressure exceeds 120/80 mmHg. However, once the activity stops, blood pressure returns to normal baseline range.

High blood pressure is a common condition in which the long-term force of blood against the arterial walls is high enough that it may eventually cause health problems, such

as heart disease.^[5] Blood pressure is determined both by the amount of blood pumped by heart and the amount of resistance to blood flow in the arteries. The ranges in the table are blood pressure guides for adults who do not have any short-term serious illnesses. People with diabetes or chronic kidney disease should keep their blood pressure below 130/80 mmHg. The abnormal blood pressure exceeds 120/80 mmHg

Long term high blood pressure is a major risk factor for coronary artery disease, stroke, vision loss, chronic kidney disease, heart failure and peripheral vascular disease. Hypertension and prehypertension have been increasing among adolescents since the 1990s^[6,7]. Hypertension affects approximately 50 million individuals in the United States and approximately 1 billion worldwide^[8]. Any medication can cause side effects and high blood pressure medications are no exception^[9], alternatively exercises are a good cure for hypertension. Physical activity and fitness have often been found to be inversely proportional to the incidence and severity of hypertension. Regular exercise is strongly recommended to reduce hypertension.^[10]

Since many individuals see their healthcare providers before starting exercise programs, providers could better counsel their patients on whether Zumba is an correct form of exercise. Thus, the purpose for this study is to find the relation between the blood pressure and zumba dance on non bp pills taking candidates.

METHODS & MATERIALS REQUIRED

The study was conducted among 30 hypertensive patients in Zumba training centre, the participants were aged between 25-45 years. Participation of the respondents was voluntary. The study was conducted for 2 months. The inclusive factors are the patients should not be under any medications for hypertension. The participants must be undertaking a regular diet and had no adverse oral habits like smoking and drinking alcohol and must do regular exercise. The patients not falling under inclusive factors were excluded. The blood pressure of the patients were estimated twice in an interval of 2 months(i.e before and after zumba). During the visit blood pressure of the patients were checked after a five minutes of rest before beginning of the workout using a automatic blood pressure monitor , the systolic and diastolic pressure were noted in mm Hg . Three values were taken and the mean was noted down to eliminate error , the values were entered and evaluated using SPSS software and the results were analyzed.

RESULT:

On the analysis of the obtained data zumba dance have significantly reduced the blood pressure level in hypertensive patient. Before the zumba dance, the mean of systolic and diastolic is 144.7333 / 92.0333 mmHg. After zumba dance , the mean of systolic and diastolic is 141.4000 / 88.8333 mmHg. After Zumba the mean reduction in systolic and diastolic pressure was 3.33 mmHg and 3.2mmHg respectively. The obtained date are tabulated in table 1 and graph is obtained.

TABLE 1

| | | Systolic pressure before zumba dance | Systolic pressure after zumba dance | Diastolic pressure before zumba dance | Diastolic pressure after zumba dance |
|--------------------|---------|--------------------------------------|-------------------------------------|---------------------------------------|--------------------------------------|
| N | Valid | 30 | 30 | 30 | 30 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 144.7333 | 141.4000 | 92.0333 | 88.8333 |
| Std. Error of Mean | | 1.29892 | 1.35917 | .60360 | .63623 |
| Median | | 145.0000 | 142.5000 | 92.5000 | 90.0000 |
| Mode | | 145.00 | 140.00 ^a | 93.00 | 90.00 |
| Std. Deviation | | 7.11450 | 7.44451 | 3.30604 | 3.48478 |
| Variance | | 50.616 | 55.421 | 10.930 | 12.144 |
| Range | | 26.00 | 28.00 | 12.00 | 13.00 |
| Minimum | | 130.00 | 125.00 | 86.00 | 82.00 |
| Maximum | | 156.00 | 153.00 | 98.00 | 95.00 |

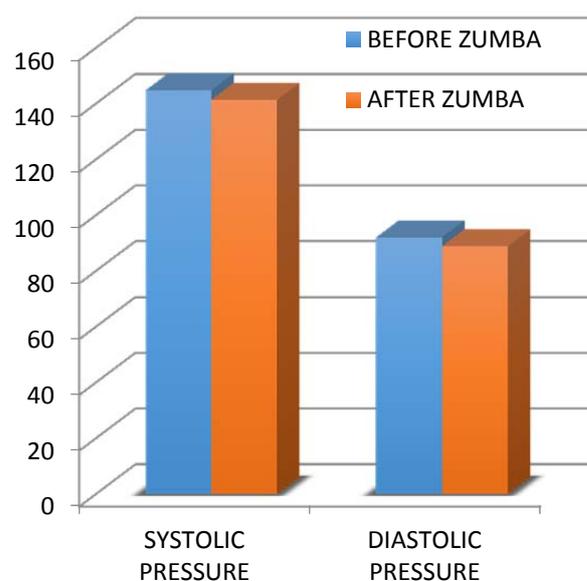


Figure 1: Systolic And Diastolic Pressure Before And After Zumba Dance

DISCUSSION:

High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease in south Asia (2010)^[11]. Hypertension (HTN) exerts a substantial public health burden on cardiovascular health status and healthcare systems in India^[12,13]. In an analysis of worldwide data for the global burden of HTN, 20.6% of Indian men and 20.9% of Indian women were suffering from HTN in 2005^[14]. The rates for HTN in percentage are projected to go up to 22.9 and 23.6 for Indian men and women, respectively by 2025^[14]. Recent studies from India have shown the prevalence of HTN to be 25% in urban and 10% in rural people in India^[15]. According to the WHO

2008 estimates, the prevalence of raised BP in Indians was 32.5% (33.2% in men and 31.7% in women)^[16]. However, only about 25.6% of treated patients had their BP under control, in a multicenter study from India on awareness, treatment, and adequacy of control of HTN^[17]. Zumba dance can be much easier and happier way in reducing blood pressure than regular methods. Zumba plays a very important role not only in reduction of body weight but also reduces blood pressure.

In this study, the mean of systolic and diastolic was 144.7333 / 92.0333 mmHg in normal hypertensive patients before practicing zumba dance; fig.2 & 4 observed that systolic and diastolic pressure were high among hypertensive patients before zumba dance. After practicing zumba dance for about two months, the mean of their systolic and diastolic pressure were 141.4000 / 88.8333 mmHg; fig.3 & 5 the systolic and diastolic pressure were found to be decreased in remarkable rate after the practice of zumba dance Astonishingly the study showed that there is a reduction in blood pressure by 3.33 mmHg in systolic and 3.2mmHg in diastolic. Thus it shows that Zumba dance have significantly reduced the blood pressure without any intake of blood pressure reducing pills.

TABLE 2 :Systolic Pressure Before Zumba Dance

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-----------|---------|---------------|--------------------|
| 130.00 | 1 | 3.3 | 3.3 | 3.3 |
| 132.00 | 1 | 3.3 | 3.3 | 6.7 |
| 134.00 | 1 | 3.3 | 3.3 | 10.0 |
| 135.00 | 2 | 6.7 | 6.7 | 16.7 |
| 137.00 | 1 | 3.3 | 3.3 | 20.0 |
| 138.00 | 1 | 3.3 | 3.3 | 23.3 |
| 141.00 | 1 | 3.3 | 3.3 | 26.7 |
| 142.00 | 1 | 3.3 | 3.3 | 30.0 |
| 143.00 | 1 | 3.3 | 3.3 | 33.3 |
| Valid 144.00 | 2 | 6.7 | 6.7 | 40.0 |
| 145.00 | 4 | 13.3 | 13.3 | 53.3 |
| 146.00 | 2 | 6.7 | 6.7 | 60.0 |
| 147.00 | 3 | 10.0 | 10.0 | 70.0 |
| 148.00 | 2 | 6.7 | 6.7 | 76.7 |
| 152.00 | 1 | 3.3 | 3.3 | 80.0 |
| 153.00 | 2 | 6.7 | 6.7 | 86.7 |
| 154.00 | 1 | 3.3 | 3.3 | 90.0 |
| 155.00 | 2 | 6.7 | 6.7 | 96.7 |
| 156.00 | 1 | 3.3 | 3.3 | 100.0 |
| Total | 30 | 100.0 | 100.0 | |

TABLE3: Systolic Blood Pressure After Zumba Dance

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-----------|---------|---------------|--------------------|
| 125.00 | 1 | 3.3 | 3.3 | 3.3 |
| 128.00 | 1 | 3.3 | 3.3 | 6.7 |
| 130.00 | 1 | 3.3 | 3.3 | 10.0 |
| 131.00 | 1 | 3.3 | 3.3 | 13.3 |
| 132.00 | 1 | 3.3 | 3.3 | 16.7 |
| 134.00 | 1 | 3.3 | 3.3 | 20.0 |
| 136.00 | 1 | 3.3 | 3.3 | 23.3 |
| 137.00 | 1 | 3.3 | 3.3 | 26.7 |
| 139.00 | 2 | 6.7 | 6.7 | 33.3 |
| 140.00 | 3 | 10.0 | 10.0 | 43.3 |
| Valid 141.00 | 1 | 3.3 | 3.3 | 46.7 |
| 142.00 | 1 | 3.3 | 3.3 | 50.0 |
| 143.00 | 3 | 10.0 | 10.0 | 60.0 |
| 144.00 | 3 | 10.0 | 10.0 | 70.0 |
| 145.00 | 2 | 6.7 | 6.7 | 76.7 |
| 149.00 | 1 | 3.3 | 3.3 | 80.0 |
| 150.00 | 2 | 6.7 | 6.7 | 86.7 |
| 151.00 | 1 | 3.3 | 3.3 | 90.0 |
| 152.00 | 2 | 6.7 | 6.7 | 96.7 |
| 153.00 | 1 | 3.3 | 3.3 | 100.0 |
| Total | 30 | 100.0 | 100.0 | |

TABLE 4:Diastolic pressure before zumba dance

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|-----------|---------|---------------|--------------------|
| 86.00 | 2 | 6.7 | 6.7 | 6.7 |
| 87.00 | 1 | 3.3 | 3.3 | 10.0 |
| 88.00 | 2 | 6.7 | 6.7 | 16.7 |
| 89.00 | 3 | 10.0 | 10.0 | 26.7 |
| 90.00 | 2 | 6.7 | 6.7 | 33.3 |
| 91.00 | 2 | 6.7 | 6.7 | 40.0 |
| Valid 92.00 | 3 | 10.0 | 10.0 | 50.0 |
| 93.00 | 5 | 16.7 | 16.7 | 66.7 |
| 94.00 | 3 | 10.0 | 10.0 | 76.7 |
| 95.00 | 1 | 3.3 | 3.3 | 80.0 |
| 96.00 | 4 | 13.3 | 13.3 | 93.3 |
| 97.00 | 1 | 3.3 | 3.3 | 96.7 |
| 98.00 | 1 | 3.3 | 3.3 | 100.0 |
| Total | 30 | 100.0 | 100.0 | |

TABLE 5:Diastolic Pressure After Zumba Dance

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| 82.00 | 1 | 3.3 | 3.3 | 3.3 |
| 83.00 | 1 | 3.3 | 3.3 | 6.7 |
| 84.00 | 1 | 3.3 | 3.3 | 10.0 |
| 85.00 | 3 | 10.0 | 10.0 | 20.0 |
| 86.00 | 3 | 10.0 | 10.0 | 30.0 |
| 87.00 | 4 | 13.3 | 13.3 | 43.3 |
| 89.00 | 1 | 3.3 | 3.3 | 46.7 |
| 90.00 | 6 | 20.0 | 20.0 | 66.7 |
| 91.00 | 3 | 10.0 | 10.0 | 76.7 |
| 92.00 | 1 | 3.3 | 3.3 | 80.0 |
| 93.00 | 4 | 13.3 | 13.3 | 93.3 |
| 94.00 | 1 | 3.3 | 3.3 | 96.7 |
| 95.00 | 1 | 3.3 | 3.3 | 100.0 |
| Total | 30 | 100.0 | 100.0 | |

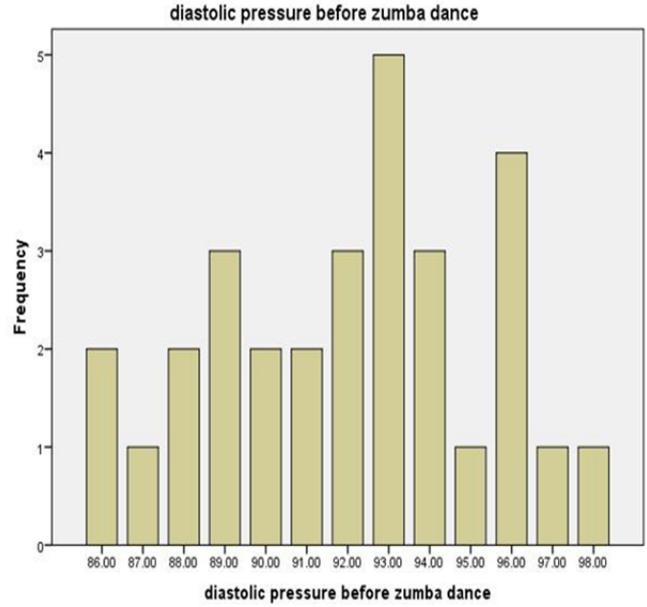


Figure 4:Diastolic Pressure Before Zumba Dance

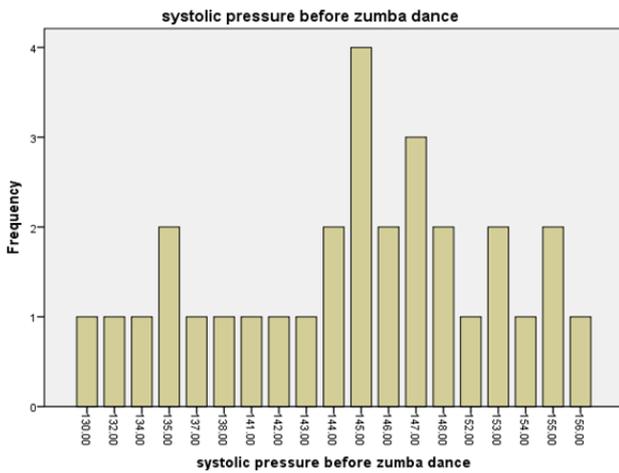


Figure 2:Systolic Pressure Before Zumba Dance

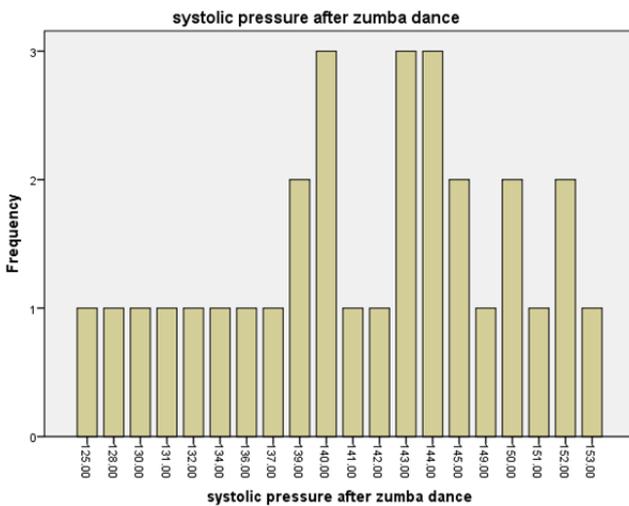


Figure 3:Systolic Pressure After Zumba Dance

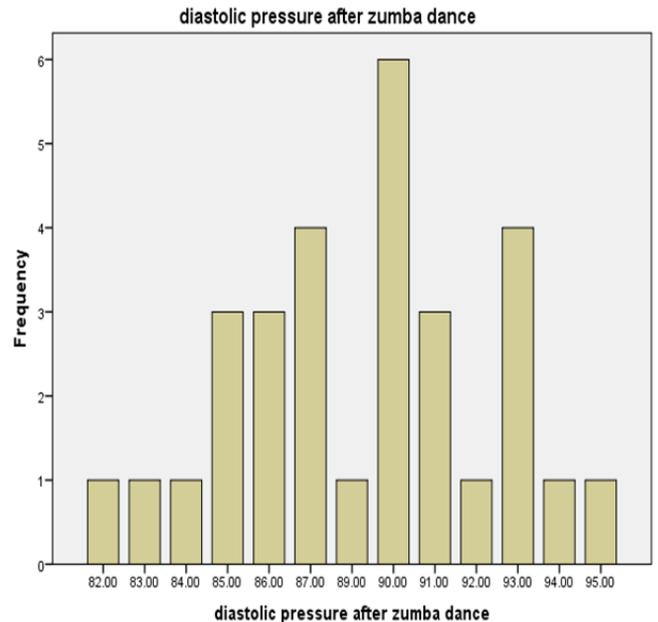


Figure 5:Diastolic Pressure After Zumba Dance

CONCLUSION:

Hypertension is one of the most common diseases found across the world in among all age groups. The present study helped us to identify that zumba dance helps to reduce blood pressure in hypertensive patients, it can be recommended instead of regular hypertensive medication which is used widely. And zumba dance does not produce any side effects as compared to regular medication and further studies must be done in this field to find better way to reduce blood pressure in hypertensive patients.

REFERENCES:

1. Parcher A. Zumba shakes the monotony of ordinary aerobic classes. *The Washington Post*. 2008. Jul 31, [August 19, 2013]. (http://articles.washingtonpost.com/2008-07-31/news/36857857_1_alberto-perlman-alberto-aghion-zumba-fitness.)
2. Zumba website. [August 19, 2013]. (<http://www.zumba.com>.)
3. Fitness Guinea Pig: Zumba, Brides Magazine
4. "About Zumba Fitness". Retrieved 10 March 2012.
5. Wootton, David M., and David N. Ku. "Fluid Mechanics of Vascular Systems, Diseases, and Thrombosis." *Annual Review of Biomedical Engineering* Annu. Rev. Biomed. Eng. 1.1 (1999): 299-329
6. Ostchega Y, Carroll M, Prineas RJ, McDowell MA, Louis T, Tilert T. Trends of elevated blood pressure among children and adolescents: data from the National Health and Nutrition Examination Survey 1988–2006. *Am J Hypertens* 2009;22:59–67.
7. Din-Dzietham R, Liu Y, Bielo M, Shamsa F. High blood pressure trends in children and adolescents in national surveys, 1963–2002. *Circulation* 2007;116:1488–96.
8. Berkow, Susan E., and Neal D. Barnard. "Blood Pressure Regulation and Vegetarian Diets." *Nutrition Reviews* 63.1 (2005): 1-8.
9. Hansson, Lennart, Alberto Zanchetti, S. George Carruthers, Björn Dahlöf, Dag Elmfeldt, Stevo Julius, Joël Ménard, Karl Heinz Rahn, Hans Wedel, and Sten Westerling. "Effects of Intensive Blood-pressure Lowering and Low-dose Aspirin in Patients with Hypertension: Principal Results of the Hypertension Optimal Treatment (HOT) Randomised Trial." *The Lancet* 351.9118 (1998): 1755-762. Web.
10. Engström, Gunnar, Bo Hedblad, and Lars Janzon. "Hypertensive Men Who Exercise Regularly Have Lower Rate of Cardiovascular Mortality." *Journal of Hypertension* 17.6 (1999): 737-42.
11. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380:2224–2260
12. Leeder S, Raymond S, Greenberg H, Liu H. A race against time. The challenge of cardiovascular disease in developing economies. New York:Columbia University; 2004
13. Srinath Reddy K, Shah B, Varghese C, Ramadoss A. Responding to the threat of chronic diseases in India. *Lancet* 2005; 366:1744–1749
14. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. *Lancet* 2005; 365:217–223
15. Gupta R. Trends in hypertension epidemiology in India. *J Hum Hypertens* 2004; 18:73–78
16. Noncommunicable diseases country profiles 2011. (http://www.who.int/nmh/countries/ind_en.pdf)
17. Hypertension Study Group Prevalence, awareness, treatment and control of hypertension among the elderly in Bangladesh and India: a multicentre study. *Bull World Health Organ* 2001; 79:490–500