Assessment of the Effects of Aerobics Fuji Dance on Body Composition and Cardiovascular Variables of a Pasuma Music Dancer at Irawo, Lagos State.

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Abstract
The study assessed the effects of aerobic Fuji dance on body composition and cardiovascular variables of a Pasuma Fuji Music dancer at Iworo-Bus Stop, Lagos State. The participant was a record seller, that used Fuji dance to patronize his business by dancing to Pasuma Fuji music aged 39years. Purposive sampling technique was used in selecting the participant. Informed consent form was given to the participant, signed and returned to the researcher. The participant danced nothing less than three times in a week. Data were collected on the body composition and cardiovascular variables of the participant. The data collected was analyzed with descriptive statistics of mean, standard deviation and inferential statistics of t-test. Five hypotheses were formulated, out of which the following three hypotheses were significant: body mass index ($t=12.85$, $p<0.05$), percent body fat ($t=14.03$, $p<0.05$) and diastolic blood pressure ($t=13.01$, $p<0.05$), while two were insignificant: systolic blood pressure ($t=12.05$, $p>0.05$) and heart rate ($t=2.26$, $p>0.05$). It was observed that BMI of the participants fell in the range considered to be normal (22.5kg/m^2), percent body fat fell in the range considered to be good (14.1-19.0), diastolic blood pressure fell in the range considered to be normal (≤ 80). Although the systolic blood pressure and heart rate were insignificant, systolic blood pressure was in the rating of pre-hypertension (128) and heart rate fell in the rating of excellent (≤ 59) both being considered normal. Based on the findings of this study, it is concluded that aerobic Fuji dance have positive effect on the body composition and cardiovascular variables of the participant. It is recommended that the aerobic Fuji dancer should continue with the aerobic Fuji dance three times in a week in order to maintain good quality of life.

Keywords: Aerobic Fuji dance, Body mass index, Blood pressure, Heart rate, Pasuma music, Percent body fat.

Introduction

Aerobic dance exercise is currently one of the most commonly practiced adult fitness activities as a valid cardiovascular training alternative, if performed according to the American College of Sports Medicine (ACSM) guidelines. It is any form of physical activity performed by activating large muscle groups, in a relatively long period (over 20 minutes) with a basically cycling character (ACSM, 1998), as reported by Henry, Michele & Daniel, (1998). This kind of activity is determined by a work intensity of 50 to 85% of

maximum oxygen consumption (VO_{2max}) and/or 60-90% of maximal heart rate (HR_{max}).

Is Aerobic Fuji dance for fun and enjoyment as opined by the participant in this study when asked questions through opinionnaire method of collecting data? Why did you take part in dancing? The participant was on the right part by answering the question that aerobic Fuji dance was for fun and enjoyment, not for business strategy as passersby taught, being a record seller or businessman.

The benefits derived from aerobic dance is more than fun and enjoyment, the benefits are multi-various and multifaceted as stated by Hoeger and Hoeger (2007) that aerobic training programme, dance inclusive increases maximal oxygen uptake ($VO_{2\ max}$), the oxygen-carrying capacity of the blood, cardiac muscle strength with a decrease in resting heart rate, enhances a lower heart rate at given workloads, an increase in the number and size of mitochondria, an increase in the number of functional capillaries, a faster recovery time, lower blood pressure, blood lipids and an increase in fat-burning enzymes. With the benefits of aerobics dance enumerated above, not known to the participant in this study than making fun and enjoyment, there is need to assess the impact of the aerobic Fuji dance on the participant so as to educate and determine the present fitness levels of the participant and compare them to health fitness and physical fitness standards, which can be used to monitor changes in the participant fitness throughout the years.

The assessment of the impact of aerobic dance is faced with paucity of research work on males due to the fact that most of the research work on aerobic dance were conducted on females and that contemporary aerobics were basically created for females as observed by Petra, Goran and Mia (2013). This is because aerobics programmes are performed to music, use certain dance choreography and therefore require a certain sense of aesthetics, rhythm and a sense for music. They submitted that aerobics dance programmes are mainly advertised to target a female population and it is therefore logical that women are the most frequent participants of aerobics. As a results, the relatively small share of studies dealing with males is not a surprise.

Corroborating this (Hooper & Noland, 1984; More et al., 1988) submitted that there is paucity of information concerning the training results of the 'low impact' dance and the dance-exercise effects in males, these two areas may reveal a departure in training outcomes compared to the effects elicited by females with 'traditional', 'high impact' dance.

On the effects of aerobic dance on the physiological paramaters, (Leelarungrayub et al., 2011; Angioi et al., 2009; Keogh et al., 2009; Jakubet et al., 2008; Schiffer et al., 2008; Pantelic et al., 2007; Lehri&Mokha, 2006; Grant et al., 2002) submitted that numerous studies carried out on aerobic dance and its effects on body have yielded mixed results of the aerobic dancing on various physiological parameters of the population. The difference may be due to difference in the cadence and impact of the various dance schedules. Jaywant (2013) observed aerobic dance to be highly effective in weight loss, but it effects on cardiovascular endurance are not pronounced after 6 months of aerobics dance.

On Meta-Analysis on aerobic dance, the following observations were made on physiological variables. Mohd and Muhammed (2015) observed changes in heart rate variability after a six month long aerobic dance or step

dance programme in women and significant difference in cardiovascular fitness and weight of participants. They recommended that aerobic dance may be used as an alternative for people who wish to lead a healthy lifestyle in a fun way. Petrofsky (2008) in a research carried out on the impact of aerobic dance on participants observed significant difference in blood pressure, heart rate and body weight. The treatment group shows some reduction in weight, heart rate and blood pressure.

Due to paucity of research on the effects of aerobic dance on body composition and cardiovascular variables of males, the norm-referenced standards on the physiological variables in this study will be used for the assessment of the physiological variables of the participant in this study.

Purpose of the study

The purpose of the study is to assess the effects of aerobic Fuji dance on the body composition and cardiovascular variables of a Pasumaaerobic Fuji music dancer.

Hypotheses

1. Aerobic Fuji dance would not have significant effect on the Heart Rate of the participant when compared with a norm-referenced standard.
2. Aerobic Fuji dance would not have significant effect on the Body Mass Index of the participant when compared with a norm-referenced standard.
3. Aerobic Fuji dance would not have significant effect on Percent body fat of the participant when compared with norm-referenced standard.
4. Aerobic Fuji dance would not have significant effect on the Systolic Blood Pressure of the participant when compared with a norm-referenced standard.
5. Aerobic Fuji dance would not have significant effect on the Diastolic Blood Pressure of the participant when compared with a norm-referenced standard.

Statement of the Problem

There was paucity of research work on the effects of Fuji aerobic dance on adult Nigerians. Nigerians are not aware of the benefits they can derive from taking part in Fuji aerobic dance. They taught it is only for fun and enjoyment. Effects of overtraining on the participant, not conforming with rules guiding training programmes or principles such as mode, frequency, intensity and duration.

Methodology

Purposive Sampling technique was used for the selection of the participant. The participant for this study was an adult aged 39 years old. A businessman and a dancer at Irawo bus stop, Ikorodu road, Lagos state. The study was carried out after obtaining the Ethical Committee Approval of the Department of Human Kinetics and Health Education, Faculty of Education, University of Lagos, Akoka.

Prior to testing, the required pre-test instructions were given to the participant and the tests were properly explained to the participant after which the following measurements were taken.

Measurement of Blood Pressure

Heart rate of the participant was taken using an Omron electronic sphygmomanometer after 10 minutes of quite sitting in a sitting position

with the feet flat on the floor and the arm of the participant placed on the table so that the arm is at the same level as the heart while the palm is turned upward. The cuff of the sphygmomanometer was wrapped around the left upper arm of the participant, instructed to remain calm and not to talk during the measurement.

Measurement of Body Fat

The skinfold caliper was used to measure the body fat at the following sites of the participant's body.

Triceps Skinfold: Anatomical landmark for the site: The posterior part of the Triceps, in the mid-line, at the level of the mid-acromialeradiale landmark. Mid-acromiale-radiale is the point equidistant from Acromium and radius.

Procedure: The participant assumes a relaxed standing position with the left arm standing by the side. The right arm should be relaxed with the shoulder joint slightly externally rotated and elbow extended by the side of the body. The fold parallel to the long axis of the arm posterior was raised with the measurer's thumb and index fingers at the marked site. The caliper was applied 1 cm below the fingers. Measurement must be read after two seconds of applied pressure. The mean of three measures obtained at least 2 minutes apart was used as a standard. The reading was to the nearest 0.5mm

Calf: Area of the greatest protuberance of the calf muscle (gastrocnemius).

After the measurement, the percent Body Fat was determined with this regression equation by Slaughter et al., (1988).

% Body Fat = [(0.735 x Triceps + Calf)] + 1.0

Measurement of Body Weight and Height

The participant's body weight was measured with bathroom weighing scale. The participant stands erect on the weighing scale bare-footed with light clothing, hands by the side. The weight measurement was read from the scale to the nearest 0.1kg.

The height of the participant was measured using the calibrated wall.

The participant stood barefooted with the feet together and the heels, buttocks and upper part of the back touching the wall. The Frankfort plane is achieved when the orbitale (lower edge of the socket) is in the sane horizontal plane as the Tragion (the notch superior to the tragus of the ear). When aligned, the vertex is the highest point on the skull

The measurer places the hands far enough along the line of the jaw of the participant to ensure the upward pressure is transferred through the mastoid processes. The participant was instructed to take and hold a deep breath and while keeping head in the Frankfort plane, the measurer applies gentle upward lift through the mastoid process. The recorder places the ruler firmly down on the vertex, crushing the hair as much as possible. The recorder further assists by watching that the feet do not come off the floor and that the position of the head is maintained in the Frankfort plane. Measurement is taken at the end of a deep inward breath. Reading is to nearest 0.1 cm.

Measurement of Body Mass Index (BMI)

The Body Mass Index of the participant was calculated by dividing the weight of the participant by the Height in metres square. BMI = Weight/Height m^2

Data Analysis

Data collected were analysed with descriptive statistics of mean and standard deviation, while inferential statistics of t-test was used to test the formulated hypotheses at 0.05 level of significance. Norm-referenced standards on the physiological variables were used for comparative analysis and assessment

Results

Table 1: Anthropometric Characteristics of Participant Variables

S/N	Age	Height	Weight
1	39yrs	1.85m	77kg

Norm-referenced standards for the variables

Table 2: Resting Heart Ratings

Heart Rate (beats/minute)	Rating
≤59	Excellent
60-69	Good
70-79	Average
80-89	Fair
≥90	Poor

Table 3: Body Mass Index

Classification	BMI
Underweight	> 18.5
Normal	18.5-24.9
Overweight	25.0-29.9
Obesity class I	30.0-34.9
Obesity class II	35.0 – 39.9
Obesity class III	≥ 40.0

Table 4: Body Composition According To Percentage Body Fat For Men

Age	Underweight	Excellent	Good	Moderate	Overweight	Significantly Overweight
≤19	<3	12.0	12.1-17.0	17.1-22.0	22.1-27.0	≥27.1
20-29	<3	13.0	13.1-18.0	18.1-23.0	23.1-28.0	≥28.1
	<3	14.0	14.1-19.0	19.1-24.0	24.1-29.0	≥29.1
30-39	<3	15.0	15.1-20.0	20.1-25.0	25.1-30.0	≥30.1
	<3	16.0	16.1-21.0	21.1-26.0	26.1-31.0	≥31.1
40-49						
≥50						

Table 5: Blood Pressure Ratings

Rating	Systolic	Diastolic
Normal	≤120	≤80
Pre-hypertension	120-139	80-89
Hypertension	≥140	≥90

Hypotheses testing

Hypothesis 1

Aerobic Fuji dance will not have significant effect on the Heart Rate of the participant when compared with a norm-referenced standard.

Table 6: t-test Analysis on heart rate of the participant.

Variables	No of Participant	Mean	±SD	df	t_{cal}	t_{crit}	remark
Heart rate	1	55	6	1	2.26	12.71	NS
Norm-referenced standard		70 - 79	0.0				

P > 0.05

Table 6 shows that there was no significant difference between the participants heart rate and Norm – Referenced Standard for adults on heart rate (t = 2.6, p > 0.05). The null hypothesis was thus not rejected because the observed heart rate was not significant when compared with the Norm – Referenced Standards for adults. This finding had no significant effect on heart rate of the participant.

Hypothesis 2

Aerobic Fuji dance will not have significant effect on the Body Mass Index of the participant when compared with a norm-referenced standard

Table 7: t-test Analysis on Body mass of the participant

Variables	**No of Participant**	**Mean**	**±SD**	**df**	**t_{cal}**	**t_{crit}**	**remark**
Body mass	1	22.5	4.4	1	12.85	12.71	S
Norm-referenced standard		18.5-25	0.0				

P < 0.05

Table 7 shows that there was a significant difference between the participant's BMI and Norm – Referenced Standard for adult on BMI (t =12.85, p< 0.05). The null hypothesis therefore was rejected because the 't' observed BMI was significantly different from the Norm – Referenced Standard for adult. This finding implies that the Aerobic Fuji Dance had a significant effect on BMI of the participant (aerobic Fuji dancer)

Hypothesis 3

Aerobic Fuji dance will not have significant effect on Percent body fat of the participant when compared with norm-referenced standard

Table 8: t-test Analysis on percent body fat of the participant.

Variables	**No of Participant**	**Mean**	**±SD**	**df**	**t_{cal}**	**t_{crit}**	**remark**
%Body fat	1	14.48	8	1	14.03	12.71	S
Norm-referenced standard		12 – 19	0.0				

P < 0.05

Table 8 shows that there was a significance difference between the participant's percent body fat and Norm – Referenced Standard for adults on percent body fat (t = 14.03/ p< 0.05). The null hypothesis was not accepted because the observed percent body fat was significantly different from the Norm – Referenced Standard for adults. This finding implies that the aerobic Fuji dance had a significant effect on percent body fat of the aerobic Fuji dancer.

Hypothesis 4

Aerobic Fuji dance will not have significant effect on the Systolic Blood Pressure of the participant when compared with a norm-referenced standard

Table 9: t-test Analysis on systolic blood pressure of the participant.

Variables	No of Participant	Mean	±SD	df	t_{cal}	t_{crit}	remark
Systolic bp	1	128	6	1	12.05	12.71	NS
Norm-referenced standard		120 – 140	0.0				

Table 9 shows that there was no significant difference between the participant's systolic blood pressure and Norm – Referenced Standards for adults. (t = 12.05, p > 0.05). The null hypothesis was not rejected because the observed systolic blood pressure was not significantly difference from the Norm – Referenced Standards for adults. The finding implies that aerobic Fuji dance had no significant effect on blood pressure of the participant.

Hypothesis 5

Aerobic Fuji dance will not have significant effect on the Diastolic Blood Pressure of the participant when compared with a norm-referenced standards

Table 10 : t-test Analysis on Diastolic blood pressure of the participant.

Variables	No of Participant	Mean	±SD	df	t_{cal}	t_{crit}	remark
Diastolic bp	1	74	6	1	13.01	12.71	S
Norm-referenced standard		80 – 89	0.0				

P < 0.05

Table 10 shows that there was significant difference between the participant's Diastolic blood pressure and Norm – Referenced Standards for adults on Diastolic blood pressure (t = 13.01, p < 0.05). The null hypothesis was therefore rejected because the observed Diastolic blood pressure was significantly different from the Norm – Referenced Standards for adults. This finding implies that the aerobic Fuji dance had a significant effect on diastolic blood pressure of the aerobic Fuji dancer.

Discussion

The effects of the aerobic Fuji dance on the selected body composition and cardiovascular variables of the aerobic Fuji dance of the participant are presented in Tables 1-10, Tables 2, 3, 4 and 5 shows the Norm – Referenced Standards based on Guidelines of American College of Sports Medicine (ACSM, 2013&2012) and clinical Guidelines on the Identification, Evaluation and Treatment of overweight and obesity in Adults (1998).

On heart rate, the participant's resting heart rate was 55 beats per minute, this value fell into the rating of 'excellent' heart rate beats per minute <59 as rated by Hoeger and Hoeger (2007), this shows that the aerobic Fuji dancer has a stronger heart which makes the participant to adapt to: cardiorespiratory or aerobic exercise (dance), blood volume increase, the enlargement of heart and the muscle gets stronger, which enhances the heart of the participant to pump more blood with fewer strokes into the working muscles, thereby promoting cardiorespiratory endurance in the participant. This is line with the findings of (Mohd & Muhammed, 2015; Petrsfsky, 2008) who observed significant differences in cardiovascular fitness with decrease in

heart rate and blood pressure. On percent body fat, the participant's percent body fat fell into the 'excellent' category, age range 30 – 39 years in which the participant belongs, aged 39 years. This shows that the participant was healthy and have less risk for cardiovascular disease since his percent body fat was not found to be greater than the 25% considered to be at risk. On body mass index (BMI), the participant had BMI of 22.5kg/m^2 which fell in the category considered to be Normal 18.5 – 24.9. On systolic blood pressure, the participant had blood pressure of 128mmHg which fell within the range of 120 – 139mmHg rated as pre-hypertension which was normal blood pressure. The participant Diastolic Blood Pressure was 74mmHg considered normal Diastolic Blood Pressure ≤ 80mmHg. Based on the descriptive statistics analysis, the participants had normal levels in the variables under assessment, therefore had less risk for cardiovascular disease, high physical fitness Standard and physically fit health wise.

Table 6, 7, 8, 9 and 10 shows the hypotheses testing of the studied variables – Heart Rate, Body Mass Index, Percent Body Fat, Systolic and Diastolic blood pressure. The results showed significant difference in the variables when compared with Norm – Referenced Standards based on Guidelines by ACMS (2013 & 2012) and Clinical Guidelines on the Identification, Evaluation and Treatment of overweight and obesity in Adults (1998). The following significant differences were observed. Heart rate ($t=2.26$, $p > 0.05$), Body Mass Index ($t = 12.85$, $p < 0.05$) Percent Body Fat ($t = 14.03$, $p < 0.05$) Diastolic Blood Pressure ($t =13.01$, $p < 0.05$) in which Systolic Blood Pressure was not significant ($t = 12.05$, $p > 0.05$).

Conclusion

Based on the findings of the study, it was concluded that the aerobic Fuji dance enhances positive body composition and cardiovascular effects on the aerobic Fuji dancer. This aerobic Fuji dance normalized the participations Heart Rate, Body Mass Index, Blood Pressure (Systolic and Diastolic) and Percent Body Fat of the participant, thereby preventing the aerobic Fuji dancer from risk of cardiovascular diseases.

Recommendations

The participant should continue with the aerobic Fuji dance on alternate days, Monday, Wednesday, and Friday for the muscles to recuperate for efficient performance of the aerobic Fuji dance and maintenance of healthy body composition and cardiovascular fitness.

Nigerians should engage in aerobic Fuji dance at least three times a week in order to maintenance good quality of life.

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