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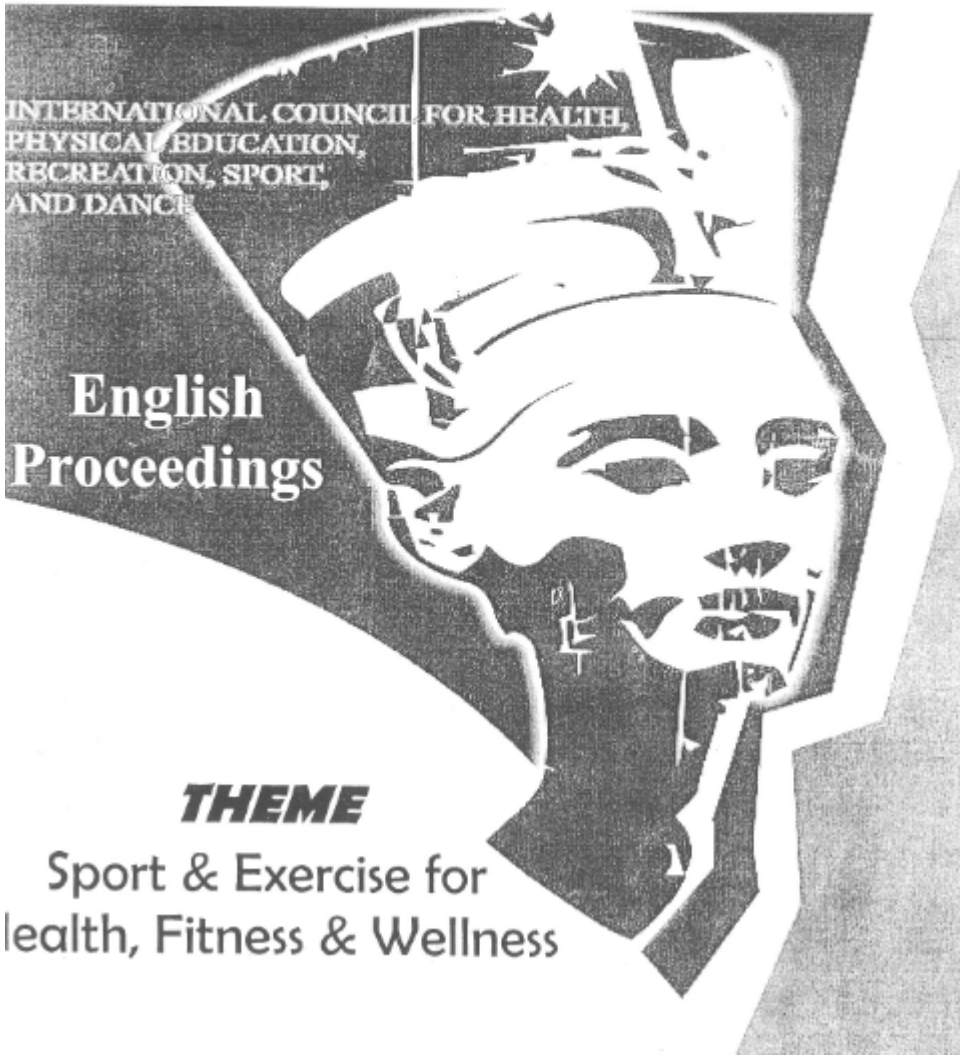

EXERCISE BEHAVIOR AS A CORRELATE OF SELECTED HEALTH INDICATORS AMONG FEMALE NURSES IN ASUBURB IN LAGOS NIGERIA

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Abstract

This study investigated the relationship between exercise behavior and selected health indicators among female nurses in the public services of Lagos State Government in a suburb within the State. These health indicators included body mass index [BMI], resting heart rate [HR] and resting blood pressure [BP]. Purposive sampling technique was used to select 62 participants, and a Self-developed questionnaire with reliability value of 0.91 was used to collect data on exercise behavior. Data collected also included those on age, height, weight, resting heart rate, and resting blood pressure. The data were analyzed using percentage, mean and Pearson's Product Moment Correlation Coefficient. Findings showed poor exercise behavior among the female nurses, and significant relationship between their exercise behavior and the health indicators.

Introduction

Enhancing efforts to promote participation in physical activity and sports among people is a critical national priority that may require urgent attention from all stakeholders (Onifade, Dansu, Williams & Adefuye, 2009). According to National Centre for Chronic Disease Prevention and Health Promotion (CDC, 2006), physical activity has been identified as one of the nations' leading health indicators in Healthy People. Agbanusi (2006) is of the opinion that

regular exercise makes one become more health conscious, and it appears that an increase in fitness level achieved via positive exercise behavior leads to an increase in self-esteem; and as one feels better about oneself, one is more likely to have a greater sense of control over the factors that influence one's health. The Surgeon General's report as stated by CDC (2006) made it clear that the health benefits of physical activity are not limited to any age-group or status. Regular participation in physical activity during childhood, adolescence, youth, and adulthood:

- Helps build and maintain healthy bones, muscles, and joints.
- Helps control weight, build lean muscle, and reduce fat.
- Prevents or delays the development of high blood pressure and helps reduce blood pressure in some adolescents with hypertension.

On therapeutic benefits, Okuneye (2002) opines that exercise can reduce mild to moderate hypertension, which are results of chronic elevation of the blood pressure above optimal level (Musa, Uzonicha & Dikko, 2003). The antihypertensive effect of exercise manifests from improved cardiac functioning that results in a reduced resting heart rate, increased maximal oxygen consumption, and decreased cardiac work (Okuneye, 2002). Musa et al. (2003) also propose exercise training as an initial approach in the treatment of essential hypertension and its associated diseases (such as obesity), especially for individuals with mild to moderate cases. They also propose exercise as a strategy to reduce the likelihood of developing hypertension in high-risk individuals and to reduce mortality in hypertensive individuals.

It is sad to note that despite these benefits of exercise, there are still numerous negative exercise behaviors among various groups of people (Okuneye & Dansu, 2007; Adeogun & Dansu, 2006; O'Brien, 2005; National Centre for Health Statistics, 2003; Okuneye, 2002; CDC,1999). Okuneye (2002) observes that physical activity behavior of people have beentremendously altered due to modernization or technological development in the society. The way people spend their leisure nowadays, particularly television viewing, result in people being less active.

Accumulating evidence indicates that low cardiorespiratory fitness increases the risk of CHD, independent of other known risk factors. Physical activity is associated with cardiorespiratory fitness and with other CHD risk factors such as obesity; and exercise can improve lipoprotein profile and lower blood pressure, and is an important component of weight control (Okuneye & Dansu, 2007; Adeogun & Dansu, 2005, 2006; Agbanusi, 2006; Okuneye & Adewale, 2004; National Institutes' of Health [NIHJ, 1994). Resting heart rate, blood pressure, and body mass index (BMI) are major health indicators. Resting heart rate is often used as indicator of fitness (Howley and Frank, 1992), which is a major factor of health and wellness. Maintaining an optimal level of blood pressure is very important to the health of individuals (Musa et al., 2003). One becomes hypertensive when the blood pressure is chronically elevated above optimal level. According to Musa et al. (2003), the National High Blood Pressure Education Program define optimal level of blood pressure as 120/80mmgHg. BMI is used to estimate healthy weight of average people. Many health or physiological variables that include heart rate and blood pressure are dependent on factors such as BMI (Nwankwo, Ene & Nwankwo, 2008). A BM I of 20 to 24 is desirable for most adults (Encyclopedia Britannica, 2008).

Studies have revealed sedentary living among various groups of people (Keep Kids Healthy, 2007; CDC, 2006; 2005; & Mason, 2002), and sex variation is of a particular interest. In the Surgeon General report on physical activity and health, a greater percentage of female than their male counterparts do not exercise (Padden, 2003). Similarly, U.S. Department of Health and Human Services (DHHS, 2002) reports women to be generally less active in comparison with men. This study was designed to investigate the relationship between exercise behaviors and selected health indicators including BMI, resting heart rate, and blood pressures for female nurses in the public services of Lagos State in a suburb of Lagos Nigeria. The following null hypotheses were therefore tested in this study.

i. There would be no significant relationship between exercise behavior and BMI of participants of the study

ii. There would be no significant relationship between exercise behavior and resting heart rates of participants this study.

iii. There would be no significant relationship between exercise behavior and systolic blood pressures of participants of this study.

iv. There would be no significant relationship between exercise behaviors and diastolic blood pressures of participants of this study.

Methods

Participants

The population of this study included all female nurses in the service of the Lagos State Government in the suburb areas within Lagos in Nigeria. Purposive sampling technique was used to select 62 of them who participated in this study. They were selected from their various stations of work — higher institutions, Local Government Secretariats, and primary health care centres within Ojo Local Government Area of Lagos State Nigeria.

Instrumentation

A self-developed questionnaire was used to collect data on exercise behaviors of the participants. It sought information on how regularly they exercise, and the duration and type of exercise engaged in. The questionnaire was given to three colleagues for the purpose of validation and was also subjected to test-retest method of reliability. Its r value was 0.91. Ages of participants were taken and recorded to be nearest their birthday, while the standard measurements procedure as described by the International Society for the Advanced of Kinanthropometry (ISAK, 2001) were followed to measure height and weight for BMI. The resting blood pressures were measured using Alcoson's Product Mercurial Sphygmomanometre and Stetoscope. These were done following the procedure described by

Okuneye and Adewale (2004). Resting heart rates were taken through palpation of radial and carotid pressure points following the procedure described by Corbin, Welk, Corbin and Welk (2004).

Data Collection

The researchers visited the work stations of the participants within the hours of 8:00am to 10:00am on each working day within two weeks for data collection. Administration of the questionnaire was done at the point of measurements. A data sheet of measured characteristics of each participant was attached to her copy of the questionnaire to avoid mix up.

Data Analysis

Data collected were coded; points were assigned to responses of participants to the maximum of 10 points on exercise behavior. All data were subjected to statistical analyses of simple percentage, mean, standard deviation and Pearson's Product Moment Correlation Coefficient (PPMC). Pictorial analysis of scattergram was used to further describe results. WINKS Statistical Data Analysis Package was used for the computation of results while hypotheses were tested at the 0.05 level of significance.

Results

Table 1: Mean, standard deviation and range results on selected physical characteristics and health indicators of participants

VARIABLE	AGE (Yrs)	WT. (Kg)	HT. (Cm)	BMI Kg/m2	SBP (mmHg)	DBP (mmHg)	RHR (b/min)
X	38.33	71.15	158.18	33.21	127.50	86.27	76.21
sd (±)	10.12	12.42	6.58	9.56	11.00	6.22	7.40
RANGE	25-57	51-113	148-171	23-44	110-150	70-100	72-96

Table 1 shows that the mean age of the participants of this study was 38.33+10.12 within the range of 25-57 years. Their BMI was 33.21+9.56 within the range of 23-44kg/m2, and the mean resting heart rate was 76.21+7.40 within the range of 72-96b/min. The mean resting bloodpressure (BP) of the participants was 127.50/86.27+11.00/6.22 within the range of 110/70-150/100mmHg.

Table 2: Frequency and percentage distributions of participants by exercise behavior

Exercise Frequency	Everyday (%)	3-4 times/wk(%)	1-2 times/wk(%)	Occasionally (%)	Not at all (%)	TOTAL (%)
	06 (9.7)	08 (12.9)	16 (25.8)	21 (33.9)	11 (17.7)	62 (100)
Average Exercise Duration	>60mins	40-50mins	20-30mins	<10 mins	Not at all	TOTAL
	03 (4.8)	07 (11.3)	23 (37.1)	18 (29.1)	11 (17.7)	62 (100)

Results in Table 2 shows that a very low percentage of the participants engaged in exercise everyday (9.7%) or at least 3 to 4 times per week (12.9%). Also, a low percentage of the participants accumulated 60 minutes (4.8%) of exercise per day, and 17.7% of the participants did not exercise at all.

Table 3: Summary of Pearson's correlation analysis on exercise behavior of participants and measured health indicators

Variables	x	sd (±)	r	r^2	T	P
BMI	33.21	9.56	0.77	0.59	4.36	0.00
Resting HR	76.21	7.40	0.52	0.27	2.46	0.03
Sys BP	127.50	11.00	0.86	0.74	4.76	0.00
Dia BP	86.27	6.22	0.45	0.20	2.21	0.04

Note. df = 61.

The results presented in Table 3 were used to test the hypotheses stated in this study. The results indicate a significant relationship between exercise behaviors of the participants, and all the health indicators measured in this study (Body Mass Index: $r = 0.77$; $p < 0.01$, Resting Heart Rate: $r = 0.52$; $p < 0.05$, Systolic Blood Pressure: $r = 0.86$; $p < 0.01$, Diastolic Blood Pressure: $r = 0.45$; $p < 0.05$). Based on these results, all the null hypotheses tested in this study were rejected.

These results are further described in figures 1 to 4

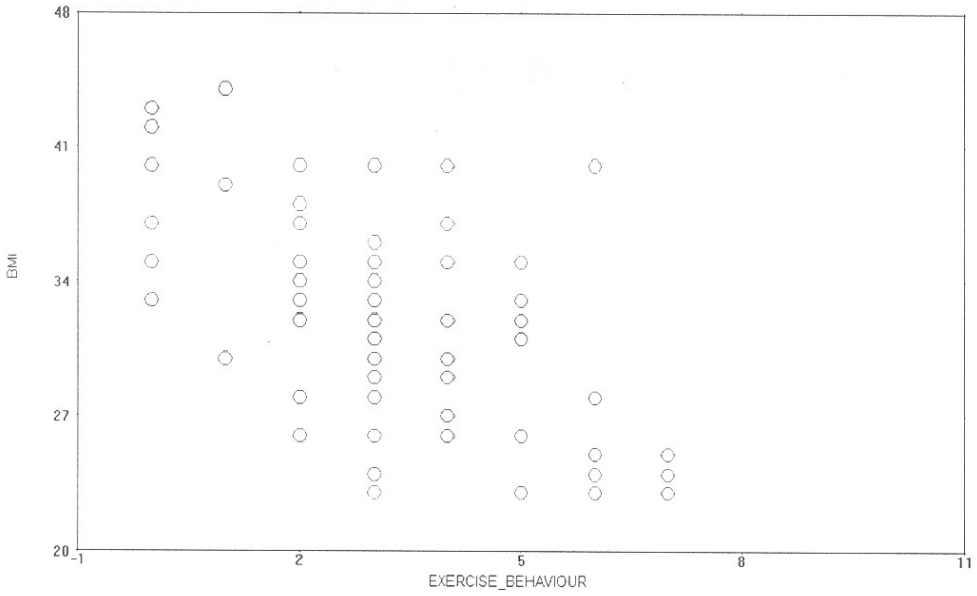

Figure 1. Scatter plot on exercise behavior and body mass index

The scatter plot in figure 1 shows greater number of participants scored below 5 points in the 10 points allotted to exercise behavior in this study. Most of those who scored low points on exercise behavior recorded high body mass index (>30Kg/m2).

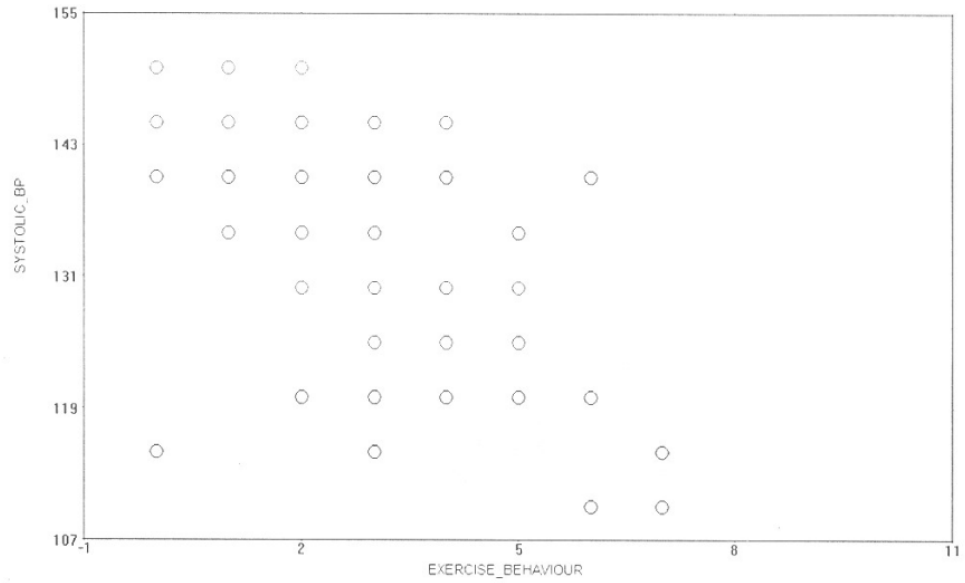

Figure 2: Scatter plot on exercise behavior and resting heart rate

The scatter plot in Figure 2 shows high number of the participants scored below 5 points in the 10 points allotted to exercise behavior in this study. Most of those who scored low points on exercise behavior recorded high resting heart rate (>90b/min).

The scatter plot in Figure 3 shows the high number of the participants scored below 5 points in the 10 points allotted to exercise behavior in this study. Most of those who scored low points on exercise behavior recorded high resting systolic blood pressure (>130mmHg).

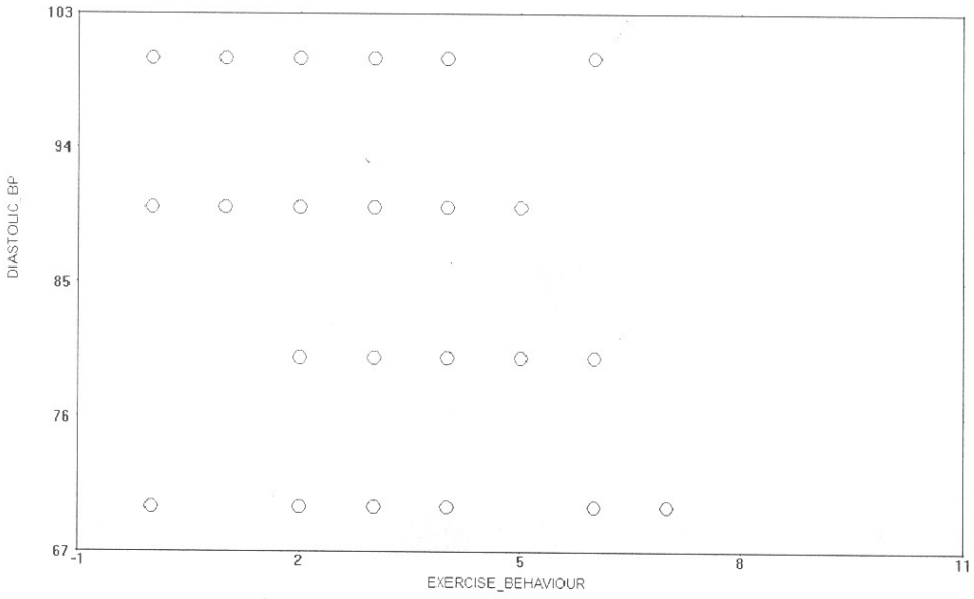

Figure 4. Scatter plot on exercise behavior and diastolic blood pressure

The scatter plot in figure 4 shows a high number of the participants scoring below 5 points in the 10 points allotted to exercise behavior in this study. Most of those who scored low points on exercise behavior recorded high resting diatolic blood pressure (>90mmHg).

Discussion

Findings of this study showed poor exercise behavior among the participants (see table 2). It could be expected that nurses who are health practitioners should be more conscious of the health values of exercise, and this should reflect in their exercise behavior. But the interview of the participants during the study showed that many of them developed this poor behavior as a result of tight work and domestic schedules. Also, a misconception of fitness and wellness as "absence of disease" is another factor responsible for the poor exercise behavior. Okuneye and Dansu (2007) reported similar behavior among female employees of Lagos State University, Nigeria, and recommended that the university management should initiate policies and practices that would motivate employees to cultivate active lifestyle.

Results of this study further show strong relationship between exercise behaviors of participants and their body mass index (see table 3 and figure 1), resting heart rate (table 3 and figure 2), resting systolic blood pressure (table 3 and figure 3), and resting diastolic blood pressure (table 3 and figure 4). These findings indicate that exercise is related to these health indicators. Okuneye, Dansu and Idowu (2008) found high BMI among a group of child-bearing age women and recommended that these women should be encouraged to participate in programmes that work against gaining excessive weight, as exercise will prevent obesity andassociated diseases. In a related study, Adeogun and Dansu (2005) report high systolic and diastolic blood pressures among a group of undergraduate students who on average had negative exercise behavior. The findings of this study also agrees with the report of Musa et al. (2003) that exercise training appears to reduce systolic blood pressure and diastolic blood pressure for people of hypertension, and this make exercise an effective non-pharmacological modality in the management of hypertension.

According to Nabofa and Muoboghere (2006), there are clear differences between individuals who participate in physical activity regularly and those who do not. These differences are in physiological parameters such as resting heart rate and resting systolic and diastolic blood pressures, with those who exercise regularly relatively better than their counterparts who do not exercise. Nabofa and Muoboghere (2006) report mean resting heart rate of 71.17 and mean resting blood pressure of 110/70mmHg for a group of combat sports athletes. Boroffice, Adeogun and Idowu (2002) also report mean resting blood pressures of 115/72mmHg and resting heart rate of 75b/min for Lagos State Sports Council coaches. These should be expected since these populations are regular at exercise and physical activities.

Similarly, O'Neill (2000) reports a significant improvement in resting heart rate, and resting systolic and diastolic blood pressures of selected females who were engaged in eight-week exercise programme. Citing other studies, O'Neill (2000) also reports 9% reduction in resting heart rate and 6% and 5.7% reduction in resting systolic and diastolic blood pressures respectively. Okuneye and Adewale (2004) also report that adolescents with high blood

pressure participate in sports and exercise as a way of avoiding or reducing the risk of hypertension.

Conclusion

Based on the findings of this study, it is concluded that there was poor exercise behaviors among the female nurses in the public services of Lagos State Government in the suburb area of Lagos, Nigeria. Also, there was a negative linear relationship between their exercise behaviors and their BMI, resting heart rate, resting systolic and diastolic blood pressures.

Recommendations

This study perceives a strong need for re-educating the nurses on wellness and fitness, to erase the common misconception of "absence of disease." It is therefore recommended that the government in collaboration with experts in exercise and wellness should organize workshops for the nurses on exercise, health and wellness. Such workshops should be rich in pragmatic approaches to positive exercise behavior, targeted at changing individuals' attitudes and practices of exercise. The nurses should also be motivated via provision of fitness facilities at places of work, and a compulsory break period should be initiated to alloW everybody to make use of these facilities. Fitness kits clothing and shoes, could also be customised by management of different offices, and given or sold at affordable prices to workers to motivate them for participation in exercise.

REFERENCES

Adeogun, F., & Dansu, A. (2006). Exercise and fitness behavior of market men and women in Badagry LGA, Lagos State Nigeria. Journal of International Council for Health, Physical Education, Recreation, Sports and Dance, 1(2), 55-58.

Adeogun, J. O., & Dansu, A. (2005). Prevalence of C\coronary heart diseases risk factors among LASU students, Ojo Lagos Nigeria. The Nigerian Academic Forum, 9(2), 54-59.

Agbanusi, E. C. (2006) Using organized physical exercise to enhance quality of life of hypertensives. Journal of International Council for Health, Physical Education, Recreation, Sports and Dance, 1(2): 51-54.

Boroffice, 0. B., Adeogun, J. 0., & Idowu, B. B. (2002) Evaluation of predisposing factors to coronary heart disease among Lagos State Sports Council Coaches. In V. Igbanugo (Ed.), Preparation of Athletes for high level performance (pp. 54-56). NASSM.

Centers for Disease Control and Prevention. (2005). Prevalence of health care providers asking older adults about their physical activity levels—United States (online). Retrieved from vvww.cdc.gov/mmwr/preview/mmwrhtml/mm5119a2.htm.

Centre for Chronic Disease Prevention and Health Promotion (CDC, 2006). Promoting better

health for young people through physical activity and sports: An overview (online). Retrieved from http://www.cdc.gov/healthyyouth.

Centre for Disease Control and Prevention (1999). A new view of physical activity at a glance (online). http://www.cdc.gov/nccdphp/sgr/ataglcin.htm 15/02/05

Encyclopedia Britannica (2008). Encyclopedia britannica (CD ROM). Ultimate Reference Suite. Howley, E. T., & Frank, B. D. (1992) Health fitness instructor's handbook. Champaign, IL: Human Kinetics Books.

Keep Kids Healthy (2007). Fitness & exercise guide (online). Retrieved from http://www.keepkidshealthy.com.

Mason, L. (2002). Children and fitness (online). Retrieved from http://akak.essortment.com/childrenandfit_rbmi.htm.

Musa, D. L. Uzonicha, J. 0., & Dikko, A. U. (2003). The role of physical exercise in the management of hypertension. Journal of Research in Health and Sports Science, 5(1), 17-26.

Nabofa, 0. E, & Muoboghere, P. A. (2006) Influence of martial arts and Aerobic fitness. Journal of International Council for Health, Physical Education, Recreation, Sports and Dance, 1(2), 19-26.

National Centre for Health Statistics (2003). Physical activity among adults. United State 2000 advance data (online). Retrieved from http:/www.cdc.gove/nchs.htm.

National Institutes of Health. (1994). Physical activity and cardiopulmonary health. NIH Guide, 23(38), 1.

Nwankwo,E. A, Ene, A. C., & Nwankwo, B. B. (2008). Prevalence of pre-hypertension, hypertension and high body mass index in newly presenting diabetics in sub-Saharan Africa. Journal of Tropical Medicine, 5(1), 35-41.

O'Brien, S. (2005). The benefits of exercise for seniors: It's never too late to improve your health (online). Retrieved from http:/www.seniorliving.about.com.

O'Neill, C. B. (2000) Physical fitness and female health: An eight-week weight control approach. Nigerian Journal of Physical Health Education and Recreation, 1, 29-32.

Okuneye, R. 0., & Adewale, E. 0. (2004) Weight and age as determinant of blood pressure among adolescents in Lagos City, Nigeria. Nigerian Journal of Physical Health Education and Recreation, 3, 17-21.

Okuneye, R. 0., (2002) Regular exercise and individual health. NigerianJournal of Physical Health Education and Recreation, 2, 5-10.

Okuneye, R. 0., & Dansu, A. (2007). Exercise behavior as correlate of resting heart rates and blood pressures of LASU female employees. Journal of Nigeria Relationship of sports Science and Medicine, IX, 87-91.