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EXERCISE BEHAVIOR AS CORRELATE OF RESTING HEART RATES AND BLOOD PRESSURES OF LASU FEMALE EMPLOYEES

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ABSTRACT

Regular exercise is a positive health behaviour that is oftenrecommended as non-pharmacological modality for prevention and management of many life-threatening diseases. This study investigated the relationship between exercise behaviours of female employees of Lagos State University' (LASU), Ojo, Lagos State, and their resting heart rates and, resting systolic and diastolic blood pressures. 97 female employees of the institution were purposively sampled to partake in the study. Self-developed questionnaire with reliability value of 0.91 was used to collected data on exercise behaviour. Data collected also included those on age, height, weight, and resting heart rate, resting systolic blood pressure and resting diastolic blood pressure. The data were analyzed using percentage, mean and Pearson's Product Moment Correlation Coefficient. Findings revealed significant relationship between exercise behaviour of the female employees and their resting heart rate and blood pressure.

INTRODUCTION

"Health is wealth" is a popular saying among peoplewho attach great values to health. Based on this, every reasonable person works with all sense of responsibility, towards maintaining good health status. One major way to achieve good health is by living an active life. According to Agbanusi (2006), regular exercise makes one become more health conscious, and it appears

that an increase in fitness level achieved via positive exercise behaviour 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. In line with this, Tejumola (2006) opines that exercise is a positive health behaviour that must be encouraged and promoted among people.

Resting heart rate and blood pressure are major health indicators. Howley and Frank (1992) mention that resting heart rate is often used as indicator of fitness, and fitness is a major factor of health and wellness. On another hand, Musa, Uzonicha and Dikko (2003) are of the opinion that maintaining an optimal level of blood pressure is very important to health of individuals. One becomes hypertensive when the blood pressure is chronically elevated above optimal level. According to Musa, Uzonicha and Dikko (2003), the National High Blood Pressure Education Programme define optimal level of blood pressure as 120 /80mmgHg.

Exercise has been widely reported to have positive effects on resting heart rate and blood pressure (Adeogun & Dansu, 2006; 2005; Agbanusi, 2006; Okuneye & Adewale, 2004; Corbin, Welk, Corbin & Welk, 2004; and Okuneye, 2002). Citing Hockey, Agbanusi (2006) specifically mention that with organized exercise programme, both resting systolic and diastolic blood pressures, and resting heart rate are lowered.

Similarly, Corbin, Welk, Corbin and Welk (2004) state that regular physical activity and exercise increase the ability of the heart muscles to pump blood as well as oxygen. This positive adaptation reflects in low resting heart rate.

From therapeutic, perspective, Okuneye (2002) asserts 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 according to Okuneye (2002) manifests from improved cardiac functioning that results in a reduced resting heart rate, increased maximal oxygen consumption and decreased cardiac work. Musa, Uzonicha & Dikko (2003) also propose exercise training as initial approach in the treatment of essential hypertension, especially for individuals with mild to moderate cases.

They also propose exercise as a strategy to reduce the likelihood of a high-risk individual developing hypertension and to reduce mortality in hypertension individuals.

It is worrisome that despite these benefits of exercise, there are still numerous negative exercise behaviour's reports among various groups of people (Adeogun &Dansu, 2006; O'Brien, 2005; National Centre for Health Statistics, 2003; Okuneye, 2002; and Centre for Disease Control and Prevention-CDC, 1999). Okuneye (2002) observes that physical activity behaviour of people have been tremendously altered due to modernization or technological development in the society. The way people spend their leisure nowadays, particularly television viewing also made people to be less active.

Gender disparity in exercise behaviour of people, as it affects women is of greater interest in this study. In the Surgeon General's report on physical activity and health, greater percentage of female than their male counterparts do not exercise (Padden, 2002). Similarly, U.S. Department of Health and Human Services (DHHS, 2002) reports women to be generally less active in comparison with men. The interest of this study was to investigate the relationships between exercise behaviours of female employees of Lagos State University (LASU), Ojo Lagos, and their resting heart rates and blood pressures. The following hypotheses were therefore tested in this study.

1. There would be no significant relationship between exercise behaviours of LASU female employees and their resting heart rates.

2. There would be no significant relationship between exercise behaviours of LASU female employees and their systolic blood pressures.

3. There would be no significant relationship between exercise behaviours of LASU female employees and their diastolic blood pressures.

METHODS AND PROCEDURE

Participants

The population of this study included all femaleemployees of Lagos State University, Ojo, Lagos. 97 of them, both teaching and non-teaching in senior category were selected to participate in this study, using purposive sampling technique.

INSTRUMENTATION

Aself-developed questionnaire was used to collectdata on exercise behaviours of the participants. It sought information on how regularly they exercise, duration and type of exercise engaged in. the questionnaire was given to three colleagues for the purpose of validation and wasalso subjected to test-retest method of reliability. Its r-value was 0.91.

Ages of participants were taken and recorded to the nearest birthday, while the standard measurements procedure as described by International Society for the Advanced of Kinanthropometry (ISAK, 2001) were followed to measures height and weight. The resting blood pressures were measured using Alcoson's Product Mercurial Sphygmomanometer and Stethoscope. These were done following the procedure described by Okuneye and Adewale (2004); and 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

Data collected were coded; points were assigned toresponses of participants to the maximum of 10 points on exercise behaviour. All data were subjected to statistical analyses of simple percentage, mean, standard deviation and Pearson's Product Moment Correlation Coefficient (PPMC). Pictorial analysis of scattergrarn was used to further describe results, and inferences were made at 0.05 alpha level.

RESULT

Table 1: Result of mean, standard deviation and range analyses on selected physical and physiological characteristics of participants

Variable	Age (Yrs)	Wt. (Kg)	HT (cm)	SBP (mmHg)	DBP (mmHg)	RHR (b /min)
X	40.82	67.95	160.25	123.25	82.11	73.65
SD	8.36	11.49	8.79	10.65	8.41	5.28
Range	27-60	53-104	147.173	90-140	60-100	64-88

Table 1 shows that mean-age of the participants of this study was 40.82+8.36 within the range of 27-60 years. Their mean weight was 67.95+11.48 within the range of 53-104kg, and the mean height was 160.25+8.79 within the range of 147-173cm. The mean resting systolic blood

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

Exercise Frequency	Everyday (%)	3-4 times/wk	1-2 times/wk	Occasionally	Not at all (%)	Total (%)
	11(11.3)	14 (14.4)	23 (23.7)	34 (35.1)	15 (15.5)	97 (100)
Average Exercise Duration	>60mins (%)	40-50 mins (%)	20-30 mins (%)	<10 mins (%)	Not at all (%)	Total (%)
	07 (7.2)	19 (19.6)	30(30.9)	28(28.0)	13 (13.34)	97 (100)

Results in table 2 shows that very few of the participants engage in exercise everyday (11.3%) or at least 3 to 4 times per week (14.4%). Similarly, very few

Table 3: Results of PPMC analysis of data on exercise behaviour of participants and measured physiological characteristics

Variables	Σx	Σy	Σxy	df	r-cri	r-cal
Exercise behavior and RHR	484.03	7144.05	3457934.52	96	0.20	*0.47
Exercise behavior and systolic BP	484.03	11955.25	5786699.66	96	0.20	*0.61
Exercise behavior and diastolic BP	I 484.03	7964.67	3855139.22	96	0.20	*0.54

* Significant at 0.05

The results presented in table 3 were used to test the hypotheses stated in this study. On exercise behaviour and resting heart rate (RHR), the table shows that the calculated r value (0.47) was greater than the critical value (0.20) at 0.05 alpha level. Based on this result, the

hypothesis that there would be no significant relationship between exercise behaviour of LASU female employees and their resting heart rate was rejected. This indicates that there is no significant relationship between the participant's exercise behaviour and their resting heart rate.

The table further reveals that the calculated r value of 0.61 was greater than 0.20 critical value at 0,05 alpha level. The result indicates that the hypothesis that there would be no significant relationship between exercise behaviour of LASU female employees and their systolic blood pressures must be rejected. This connotes that there is significant relationship between the participants' exercise behaviours and their systolic blood pressures.

The table also reveals that the calculated r-value of 0.54 was greater than 0.20 critical value at 0.05 alpha level. Based on this result, the hypothesis that there would be no significant relationship between exercise behaviour of LASU female employees and their diastolic blood pressure was rejected. This indicates that there is significant relationship between the participants' exercise behaviours and their diastolic blood pressures.

These results are further described in figures 1 to 3.

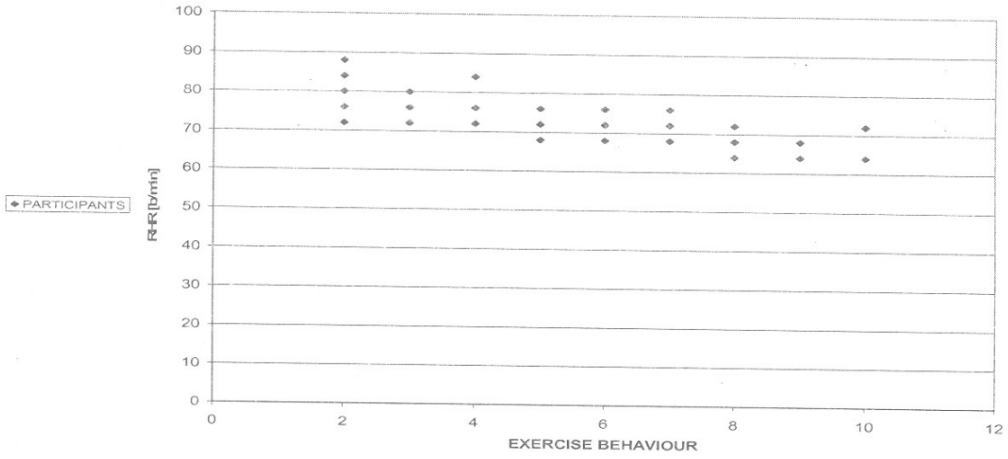

Figure 1: Scattergram on exercise behaviour and resting heart rate (RHR)

Figure 1 shows great relationship between behaviour and resting heart rate. It reveals lower resting heart rate for those with higher positive exercise behaviour.

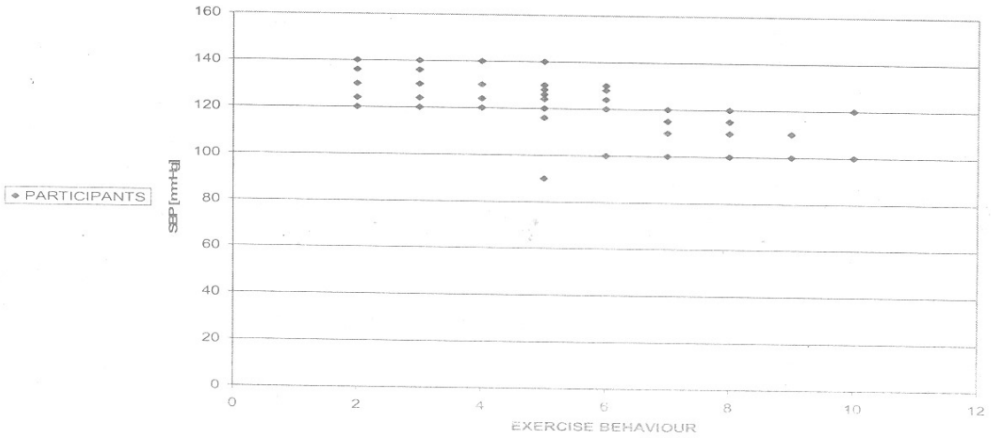

Figure 2: Scattergram on exercise behavior and resting systolic blood pressure (SBP)

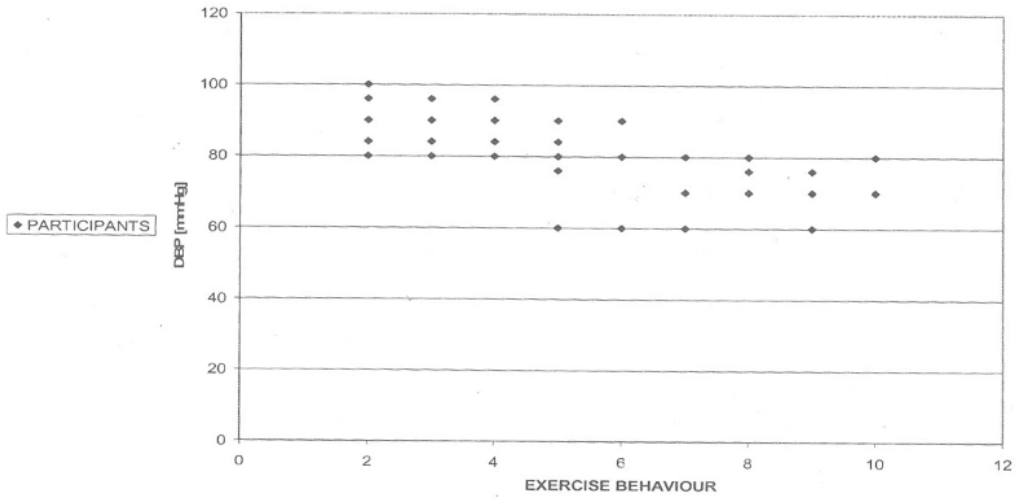

Figure 3: Scattergram on exercise behaviour and resting diastolic blood pressures

Figure 3 shows great relationship between exercise behaviour and resting diastolic blood pressure. It reveals lower resting diastolic blood pressure for participants with high positive exercise behaviour

DISCUSSION

Results of this study as presented in Table 3 and figures 1, 2, and 3 reveal linear relationships between exercise behaviours of participants in this study, and their resting heart rates, resting systolic blood pressures and resting diastolic blood pressures. These findings indicate that

exercise has positive effects on these parameters. Though this study is on normal individuals, it agrees with the report of Musa, Uzonicha and Dikko (2003) that exercise training appears to reduce systolic blood pressure and diastolic blood pressure by approximately 10mmHg in individuals with mild to moderate hypertension, and this make exercise an effective non-pharmacological modality in the management of hypertension.

Studies have shown that exercise training results in many long-term physiological adaptations, which improve the body's ability to maintain homeostasis. According to Nabofa and Muoboghere (2006), there are clear differences between individuals who trained or exercise 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 practices that will motivate employees to participate in exercise.

There should be everyday break from work for at least one hour. During this period, workers should be encouraged to participate in various sports and exercise programmes as a form of recreation. Various sports clubs such as tennis club, swimming club, fitness club and cycling club should be established in the university with adequate facilities and equipment, as these will encourage employees to participate more in exercise and sports

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