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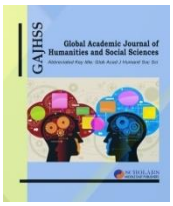

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Original Research Article

Effects of a Five-Week Anaerobic Exercise on Anthropometric, Motor Performance and Cardiorespiratory Indices of Women in Isiokpo, Rivers State

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Abstract: This research focuses on: "Effects of a five-week anaerobic exercise on Cardiorespiratory Indices of women in Isiokpo, Rivers State". The aim of the study was to determine the effects of a five-week anaerobic exercise on cardiorespiratory indices of women in Isiokpo, Rivers State. The study have five Hypothesis Quasi-Experimental research design was used, an oral interview was used to identify the Women living a sedentary life style out of seventy five woman who volunteered for the study (60) women were selected for the study, the instrument used was a standardized instrument such as sphygmomanometer, dynamometer, skinfold caliper among others, interval training programs was used for the methodology the study has two experimental groups and a control group. A descriptive statistics of mean and standard deviation (SD) for demographic data and inferential statistics of ANCOVA for hypotheses testing. Findings: Most woman feel that the house chore activities are enough exercise to keep them physically fit, the results of the study indicated that there was significant positive effect of anaerobic exercise on the cardiorespiratory indices of women in both experimental group I and experimental group II; whereas, there were no effect on the subjects in the control group. The study concluded that Women are at risk of having chronic diseases, due to the fact that majority of the women had little or no idea about anaerobic exercises; and thus did not create time to participate in such exercises It was therefore recommended that women living a sedentary lifestyle should be engaged in anaerobic exercise so as to enhance their anthropometric and motor performance to attain optimal health.

Keywords: Cardiorespiratory, Anaerobic, exercise, Sedentary Life, Maximal Oxygen Consumption.

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INTRODUCTION

Anaerobic exercises has enormous benefits on performance indices such as anthropometric performance parameters, motor performance parameters and cardiorespiratory performance parameters which results to enhancement of metabolic activities increases, hemoglobin volume increases, cardiac volume and stroke volume also increase and the blood bed that readily adapt to varying demands; anaerobic exercise as stated by iterated that (Breus and O'Connor, 2017).

It is noteworthy that both Balk (2010) and Bushman (2014) in their independent studies conspicuously stated that there are two major organs that are required for the supplying of oxygen rich blood to the working muscles, they are in turn the major organs that also form the key components of the circulatory system. The two organs that are

responsible for achieving the onerous task stated above are the heart and the lungs. Subsequently, the oxygen rich blood supplied to the working muscles are utilized to produce the required amount of energy needed for sustained physical activities and sporting competitions.

Furthermore, the ability of an individual's heart and lungs to deliver oxygen contained in the oxygen rich blood to the working muscles is affected by several physiological components like maximum oxygen consumption (VO_2max), heart rate, cardiac output and stroke volume.

Balraj, Jenny, Ebrahim, Tiffany, Neil, Rees, David, and Rod, (2016) stated that for efficient delivery of oxygen to the working muscles to be achieved, an individual needs to train and participate in physical activities that will build up the energy stores needed for proper development, in terms of improvement and maintenance of the efficiency of cardiorespiratory fitness level. Faulkner (2017), further defined cardiovascular fitness as the ability of the heart, lungs, blood vessels and organs to consume, transport and utilize oxygen in order to achieve cardiorespiratory efficiency. This type of fitness is health-related component of physical fitness that is brought about by sustained physical activities.

The maximum volume of oxygen the body can consume and use is referred to as maximum oxygen consumption (VO_2max). When an individual exercises regularly, the cardiovascular fitness level increase because the heart becomes more efficient at pumping blood, thereby easing the appropriate both the supply of nutrients and delivery of oxygen to the various organs, tissues and cells of the body in their required proportions; thus, making the entire systems of the body to be more efficient at using both the nutrients and oxygen supplied (Drazen, Vladimir, Alessandro, Mirjana, Tea, Maha and Johnny, 2018). In another study carried out by Park (2016), he stated that the rate at which physical activity decreases the risk of having coronary heart disease and other inflammatory diseases is equivalent to the rate at which physical inactivity or any other form of sedentary life style can result to high increase in the risk of having coronary heart disease which can also affect the proper functioning of organs that are dependent on the heart and lungs for the supply of oxygen rich blood and nutrients. In the same vein, Billinger, Arena and Bernhardt (2014), aptly further stated that, the optimal functioning of the heart and lungs (which are the main organs that make up the cardiovascular system and respiratory system respectively) within the human body are often affected by some unhealthy lifestyle choices such as; poor eating habits, sedentary lifestyle, lack of exercise, excessive intake of alcohol and uncontrollable smoking habit amongst others. Unhealthy lifestyle choices without any quick and proper intervention are usually detrimental to the health of an individual or group of persons; the successive resultant effect could be noticed physically or could alter the physiological functioning of the vital organs of the body which are already prone to several debilitating environmental pollutions which are responsible for triggering certain underlying ailments and could further exacerbate varying degrees of passive ailments associated with the different aforementioned vital organs that makes up the systems of the human body; the penultimate problem that could result from an unhealthy lifestyle that may affect both the cardiovascular system and respiratory system is the death of the affected individual (Eckel, 2014).

2.0 REVIEW OF RELEVANT LITERATURE

2.1 This study focuses on "the Effects of a five-week anaerobic exercise on cardiorespiratory indices of women in Isiokpo, Rivers State". The following are the various headings in which the theoretical /conceptual framework of the literature review was discussed:

The Theory of Use and Disuse or Lamarckism proposed by Jean-Baptiste Lamarck (1744-1829), a French naturalist is applicable to the effective or ineffective usage of muscles. The theory of Use and Disuse states that:

1. The environment makes an organism to have some needs;
2. In order to satisfy these needs, the organism may use an organ;
3. An organ that is much used develops;
4. An organ that is not used degenerates;
5. Characteristics acquired by an organism while satisfying the needs created by the environment are inherited by the offspring.

The theory described above is most important and is used as the framework on which the present research is hinged. A woman's body adapts to meet stresses put upon it. When he/she runs often, the body will adapt as best as it can to running and will likely run farther and faster and more efficiently. If the individual stops running, his or her body will adapt to the new level of lower stress and will eventually lose the ability to run long distances, at great speed or with efficiency. In the same way, muscles grow (hypertrophy) or shrink (atrophy) according to the stresses placed upon them. They tone or get flabby according to the level and type of use.

2.2 Conceptual Framework

2.2.1 The Basic Physiological System of the Body

In this study, the basic physiological systems of the body that were discussed include: cardiovascular system and the energy system.

2.2.2 The Physiology of the Cardiovascular System

The primary function of the heart and blood vessels is to transport oxygen, nutrients, and byproducts of metabolism. Oxygenated and nutrient rich blood is distributed to tissues through the arterial system, which branches into smaller and smaller blood vessels from arteries to arterioles to capillaries (where most exchange occurs). Usaki (2009), stated that deoxygenated blood and metabolic byproducts are returned from capillaries through venules and then vein. The heart functions as a pump to maintain circulation. The heart is a discrete organ, which in humans has four distinct chambers. Conceptually, there is the right side of the heart (right atrium and right ventricle) which receives blood returning from the periphery and send it to the lungs (via the pulmonary artery) for re-oxygenation. Once blood is re-oxygenated in the lungs it is returned to the left side of the heart via the pulmonary veins. After entering the left atrium, blood enters the left ventricle and is pumped into the aortic arch for distribution to the entire body (Drazen *et al.*, 2018).

The following hypotheses were tested at 0.05 level of significance:

1. H_{O6}: There is no Significant Difference in the Effect of Anaerobic Exercise on the cardiovascular endurance of women in Isiokpo, Rivers State
2. H_{O7}: There is no Significant Difference in the Effect of Anaerobic Exercise on the VO_2max of women in Isiokpo, Rivers State
3. H_{O8}: There is no Significant Difference in the Effect of Anaerobic Exercise on the heart rate of women living sedentary lifestyle s in Isiokpo, Rivers State.
4. H_{O9}: There is no Significant Difference in the Effect of Anaerobic Exercise on the systolic blood pressure of women living sedentary lifestyle s in Isiokpo, Rivers State
5. H_{O10}: There is no Significant Difference in the Effect of Anaerobic Exercise on the diastolic blood pressure of women in Isiokpo, Rivers State

3.0 RESEARCH METHODOLOGY

This research was designed to study the effects of a five-week cardiorespiratory indices of women in Isiokpo, Rivers State.

In this study, quasi-experimental research design was adopted. The area of study was Isiopko-Alimini, Rivers State, located in Ikwerre L.G.A. in Rivers state; The sample size for this study comprises of sixty (60) women who were living sedentary life style and were selected using judgmental sampling technique out of a total of the first seventy-five (75) women who volunteered as the subjects and were either indigenes or residents in Isiopko-Alimini, Rivers State. An oral interview was used to select the woman living a sedentary life style, a standardized instrument such as Hand dynamometer, grip muscle strength. Interval Timer Clock, Weighting Scale: Stop Watch, Sphygmomanometer, stethoscope was used for the performance variables:

Table-4.3.12: Hypothesis 6 There is no Significant Difference in the Effect of Anaerobic Exercise on the Cardiovascular Endurance of Women in Isiokpo, Rivers State (for N = 60)

ANCOVA Tests of Between-Subjects Effects							
Dependent Variable: Posttest							
Source	Sum of Squares	DF	Mean Square	F	P	Partial Eta Squared	Remarks
Corrected Model	478.73[a]	3	159.58	540.27	P < 0.05	1.00	S
Intercept	4.02	1	4.02	212.72	P < 0.05	1.00	S
Pretest	18.50	1	18.50	214.71	P < 0.05	1.00	S
Group	474.66	2	237.33	716.98	P < 0.05	1.00	S
Error	0.00	56	0.00				
Total	9954.00	60					
Corrected Total	478.733	59					

a. R Squared = 1.00 (Adjusted R Squared = 1.00)
b. Computed using alpha = 0.05

The Table 4.3.12 shows the ANCOVA Tests between subjects effects, the remark column shows that the various P values and were juxtaposed with the alpha level of 0.05 which was used as the indicator to determine the level of significance of the results obtained while testing the effect of anaerobic exercise on the cardiovascular endurance of women in Isiokpo, Rivers State. The remark column for the

group contains either "S" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was less than the alpha level of 0.05 and statistically significance) or "NS" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was greater than the alpha level of 0.05 and statistically not significant).

The result shows that the groups (Experimental Group I, Experimental Group II and Control Group) contained in the rows (intercept) had a statistically significance difference on the cardiovascular endurance (F=212.723, DF=1/56, P<0.05, S). Similarly, in the column (pretest) there was a statistically significance difference on cardiovascular endurance (F=214.71, DF=1/56, P<0.05, S) and also, in the interaction effect (group) there was a statistically significance difference on cardiovascular endurance (F=716.77, DF=2/56, P<0.05, S). Therefore, It was on this basis that the following hypotheses associated with the anthropometric variables of the women which states that; there will be no significant effect of anaerobic exercise on the cardiovascular endurance of women in Isiokpo, Rivers State was rejected whereas the alternate hypotheses of there will be significant effect of anaerobic exercise on the cardiovascular endurance of women in Isiokpo, Rivers State was accepted.

Based on the results, it shows that the anaerobic exercise of Agility test and Margaria test reduced the cardiovascular risk factors of the women by improving both the cardiovascular endurance and fitness level of the women who participated in the anaerobic exercises. Also, the result is in harmony with the assertion of Cureton and Warren, (2017) in their outlined enormous benefits of anaerobic exercise such as improved cardiovascular endurance, metabolism activities increase, hemoglobin volume increase, cardiac volume and stroke volume increase and the blood bed readily adaptability to varying demands.

Table-4.3.13: Mean Difference Comparison of the VO_2max of Women Living Sedentary Lifestyle (for N =60)

Pairwise Mean Comparisons							
Dependent Variable: Posttest Value							
Group (I) For Anaerobic Regimen	Group (J) For Anaerobic Regimen	Mean Difference (I-J)	Std. Error	P	95% Confidence Interval for Difference[b]		Remarks
					Lower Bound	Upper Bound	
Experimental Group I	Experimental Group II	-0.14	0.20	P > 0.05	-0.62	0.35	NS
	Control Group	4.53*	0.20	P < 0.05	4.04	5.01	S
Experimental Group II	Experimental Group I	0.14	0.20	P > 0.05	-0.35	0.62	NS
	Control Group	4.67*	0.20	P < 0.05	4.18	5.15	S
Control Group	Experimental Group I	-4.53*	0.20	P < 0.05	-5.01	-4.04	S
	Experimental Group II	-4.67*	0.20	P < 0.05	-5.15	-4.18	S
Based on estimated marginal means *. The mean difference is significant at the 0.05 level. b. Adjustment for multiple comparisons: Bonferroni.							

Table 4.3.13 shows the summary of the VO_2Max mean difference comparison of the participants before and after administering the anaerobic test (margaria or agility) including the interaction among the various groups with one another so as to ascertain the mean difference between groups. The results from the above Table 4.3.13 indicates that the interaction between the Experimental Group I and Experimental Group II (vice versa) had a P value which is greater than the alpha significance level of 0.05 which therefore indicate that there is no significant mean difference between the two groups whereas the interaction involving either the Control Group and Experimental Group I (vice versa) or the Control Group and Experimental Group II (vice versa) shows that the P value is less than the alpha significance level of 0.05 thereby indicating that there is a significant mean difference between Control Group and Experimental Group I (vice versa) or the Control Group and Experimental Group II (vice versa).

Table-4.3.14: Hypothesis 7: There is no Significant Difference in the Effect of Anaerobic Exercise on the VO_2max of Women in Isiokpo, Rivers State (for N = 60)

ANCOVA Tests of Between-Subjects Effects							
Dependent Variable: Posttest							
Source	Sum of Squares	DF	Mean Square	F	P	Partial Eta Squared	Remarks
Corrected Model	285.677[a]	3	95.226	247.185	P < 0.05	.930	S
Intercept	51.144	1	51.144	132.759	P < 0.05	.703	S
Pretest	6.577	1	6.577	17.071	P < 0.05	.234	S
Group	281.601	2	140.801	365.488	P < 0.05	.929	S
Error	21.573	56	.385				
Total	3911.000	60					
Corrected Total	307.250	59					
a. R Squared = 0.93 (Adjusted R Squared = 0.93) b. Computed using alpha = 0.05							

The Table 4.3.15 shows the ANCOVA Tests between subjects effects, the remark column shows that the various P values and were juxtaposed with the alpha level of 0.05 which was used as the indicator to determine the level of significance of the results obtained while testing the effect of anaerobic exercise on the VO_2max of women in Isiokpo, Rivers State. The remark column for the group contains either "S" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was less than the alpha level of 0.05 and statistically significance) or "NS" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was greater than the alpha level of 0.05 and statistically not significant).

The result shows that the groups (Experimental Group I, Experimental Group II and Control Group) contained in the rows (intercept) had a statistically significance difference on the VO_2max (F=132.76, DF=1/56, P<0.05, S). Similarly, in the column (pretest) there was a statistically significance difference on VO_2max (F=17.07, DF=1/56, P<0.05, S) and also, in the interaction effect (group) there was a statistically significance difference on VO_2max (F=365.49, DF=2/56, P<0.05, S). Therefore, It was on this basis that the following hypotheses associated with the physiological performance variables of the women which states that; there will be no significant effect of anaerobic exercise on the VO_2max of women in Isiokpo, Rivers State was rejected whereas the alternate hypotheses of there will be significant effect of anaerobic exercise on the VO_2max of women in Isiokpo, Rivers State was accepted.

Based on the results, it shows that the anaerobic exercise of Agility test and Margaria test reduced the cardiovascular risk factors of the women by improving both the VO_2max and fitness level of the women who participated in the anaerobic exercises. Also, the result is in harmony with the assertion of Cureton and Warren, (2017) in their outlined enormous benefits of anaerobic exercise such as increased VO_2max, metabolism activities increase, hemoglobin volume increase, cardiac volume and stroke volume increase and the blood bed readily adaptability to varying demands.

Table-4.3.15: Mean Difference Comparison of the Heart Rate of Women Living Sedentary Lifestyle (for N = 60)

Pairwise Mean Comparisons							
Dependent Variable: Posttest Value							
Group (I) For Anaerobic Regimen	Group (J) For Anaerobic Regimen	Mean Difference (I-J)	Std. Error	P	95% Confidence Interval for Difference[b]		Remarks
					Lower Bound	Upper Bound	
Experimental Group I	Experimental Group II	-2.45*	0.68	P < 0.05	-4.14	-.759	S
	Control Group	-6.68*	0.54	P < 0.05	-8.01	-5.35	S
Experimental Group II	Experimental Group I	2.45*	0.68	P < 0.05	0.76	4.14	S
	Control Group	-4.23*	0.57	P < 0.05	-5.65	-2.82	S
Control Group	Experimental Group I	6.68*	0.54	P < 0.05	5.35	8.01	S
	Experimental Group II	4.234*	.574	P < 0.05	2.817	5.652	S
Based on estimated marginal means *. The mean difference is significant at the 0.05 level. b. Adjustment for multiple comparisons: Bonferroni.							

Table 4.3.15 shows the results of the Heart Rate mean difference comparison of all the possible combinations of interaction among the various groups which consist of Experimental Group I and Experimental Group II and Control Group with the result indicating that their P values where less than the alpha significance level of 0.05 which therefore indicate that there is a significant mean difference among all the possible resultant combinations of the various interacting groups which consist of Experimental Group I and Experimental Group II and Control Group.

Table-4.3.16: Hypothesis 8: There is no Significant Difference in the Effect of Anaerobic Exercise on the Heart Rate of Women in Isiokpo, Rivers State (for N = 60)

ANCOVA Tests of Between-Subjects Effects							
Dependent Variable: Posttest							
Source	**Sum of Squares**	**DF**	**Mean Square**	**F**	**P**	**Partial Eta Squared**	**Remarks**
Corrected Model	510.49[a]	3	170.16	66.94	P < 0.05	.782	S
Intercept	123.87	1	123.87	48.73	P < 0.05	.465	S
Pretest	77.19	1	77.19	30.37	P < 0.05	.352	S
Group	443.07	2	221.54	87.15	P < 0.05	.757	S
Error	142.36	56	2.54				
Total	311261.00	60					
Corrected Total	652.85	59					
a. R Squared = 0.78 (Adjusted R Squared = 0.77) b. Computed using alpha = 0.05							

The Table 4.3.16 shows the ANCOVA Tests between subjects effects, the remark column shows that the various P values and were juxtaposed with the alpha level of 0.05 which was used as the indicator to determine the level of significance of the results obtained while testing the effect of anaerobic exercise on the heart rate of women in Isiokpo, Rivers State. The remark column for the group contains either "S" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was less than the alpha level of 0.05 and statistically significance) or "NS" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was greater than the alpha level of 0.05 and statistically not significant).

The result shows that the groups (Experimental Group I, Experimental Group II and Control Group) contained in the rows (intercept) had a statistically significance difference on the heart rate (F=48.73, DF=1/56, P<0.05, S). Similarly, in the column (pretest) there was a statistically significance difference on heart rate (F=30.37, DF=1/56, P<0.05, S) and also, in the interaction effect (group) there was a statistically significance difference on heart rate (F=87.15, DF=2/56, P<0.05, S). Therefore, It was on this basis that the following hypotheses associated with the physiological performance variables of the women which states that; there will be no significant effect of anaerobic exercise on the heart rate of women in Isiokpo, Rivers State was rejected whereas the alternate hypotheses of there will be significant effect of anaerobic exercise on the heart rate of women in Isiokpo, Rivers State was accepted.

Based on the results, it shows that the anaerobic exercise of Agility test and Margaria test reduced the cardiovascular risk factors of the women by improving both the heart rate and fitness level of the women who participated in the anaerobic exercises. Also, the result is in harmony with the assertion of Cureton and Warren, (2017) in their outlined enormous benefits of anaerobic exercise such as improved heart rate ,metabolism activities increase, hemoglobin volume increase, cardiac volume and stroke volume increase and the blood bed readily adaptability to varying demands.

Table-4.3.17: Mean Difference Comparison of the Systolic Blood Pressure of Women Living Sedentary Lifestyle (for N = 60)

Pairwise Mean Comparisons							
Dependent Variable: Posttest Value							
Group (I) For Anaerobic Regimen	Group (J) For Anaerobic Regimen	Mean Difference (I-J)	Std. Error	P	95% Confidence Interval for Difference[b]		Remarks
					Lower Bound	Upper Bound	
Experimental Group I	Experimental Group II	3.69*	0.90	P < 0.05	1.48	5.90	S
	Control Group	-6.47*	0.88	P < 0.05	-8.65	-4.30	S
Experimental Group II	Experimental Group I	-3.69*	0.90	P < 0.05	-5.90	-1.48	S
	Control Group	-10.16*	0.91	P < 0.05	-12.40	-7.92	S
Control Group	Experimental Group I	6.47*	0.88	P < 0.05	4.30	8.65	S
	Experimental Group II	10.16*	.908	P < 0.05	7.92	12.40	S
Based on estimated marginal means *. The mean difference is significant at the 0.05 level. b. Adjustment for multiple comparisons: Bonferroni.							

Table 4.3.17 shows the summary of the mean difference comparison of each group interacting with one another after the pretest and posttest systolic blood pressure values were obtained using the Sphygmanometer and to the pretest and posttest systolic blood pressure mean were obtained using arithmetic calculation. The result therefore, shows that there is no significant difference in the systolic blood pressure mean difference comparison between the groups at 0.05 alpha level of significance.

Table-4.3.18: Hypothesis 9: There is no Significant Difference in the Effect of Anaerobic Exercise on the Systolic Blood Pressure of Women in Isiokpo, Rivers State (for N = 60)

ANCOVA Tests of Between-Subjects Effects							
Dependent Variable: Posttest							
Source	**Sum of Squares**	**DF**	**Mean Square**	**F**	**P**	**Partial Eta Squared**	**Remarks**
Corrected Model	1104.89[a]	3	368.30	47.65	P < 0.05	0.72	S
Intercept	10.69	1	10.69	1.38	P < 0.05	0.02	S
Pretest	297.25	1	297.25	38.46	P < 0.05	0.41	S
Group	1000.16	2	500.08	64.70	P < 0.05	0.70	S
Error	432.85	56	7.73				
Total	1090722.00	60					
Corrected Total	1537.73	59					
a. R Squared = 0.72 (Adjusted R Squared = 0.78) b. Computed using alpha = 0.05							

The Table 4.3.18 shows the ANCOVA Tests between subjects effects, the remark column shows that the various P values and were juxtaposed with the alpha level of 0.05 which was used as the indicator to determine the level of significance of the results obtained while testing the effect of anaerobic exercise on the systolic blood pressure of women in Isiokpo, Rivers State. The remark column for the group contains either "S" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was less than the alpha level of 0.05 and statistically significance) or "NS" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was greater than the alpha level of 0.05 and statistically not significant).

The result shows that the groups (Experimental Group I, Experimental Group II and Control Group) contained in the rows (intercept) had a statistically significance difference on the systolic blood pressure (F=1.38, DF=1/56, P<0.05, S). Similarly, in the column (pretest) there was a statistically significance difference on systolic blood pressure (F=38.46, DF=1/56, P<0.05, S) and also, in the interaction effect (group) there was a statistically significance difference on systolic blood pressure (F=64.70, DF=2/56, P<0.05, S). Therefore, It was on this basis that the following hypotheses associated with the physiological performance variables of the women which states that; there will be no significant effect of anaerobic exercise on the systolic blood pressure of women in Isiokpo, Rivers

State was rejected whereas the alternate hypotheses of there will be significant effect of anaerobic exercise on the systolic blood pressure of women in Isiokpo, Rivers State was accepted.

Based on the results, it shows that the anaerobic exercise of Agility test and Margaria test reduced the cardiovascular risk factors of the women by improving both the systolic blood pressure and fitness level of the women who participated in the anaerobic exercises. Also, the result is in harmony with the assertion of Cureton and Warren, (2017) in their outlined enormous benefits of anaerobic exercise such as improved systolic blood pressure, metabolism activities increase, hemoglobin volume increase, cardiac volume and stroke volume increase and the blood bed readily adaptability to varying demands.

Table-4.3.19: Mean Difference Comparison of Diastolic Blood Pressure of Women Living Sedentary Lifestyle (for N = 60)

Pairwise Mean Comparisons							
Dependent Variable: Posttest Value							
Group (I) For Anaerobic Regimen	Group (J) For Anaerobic Regimen	Mean Difference (I-J)	Std. Error	P	95% Confidence Interval for Difference[b]		Remarks
					Lower Bound	Upper Bound	
Experimental Group I	Experimental Group II	-1.62	0.67	P > 0.05	-3.27	0.025	NS
	Control Group	-4.70*	0.70	P < 0.05	-6.42	-2.98	S
Experimental Group II	Experimental Group I	1.62	0.66	P > 0.05	-.03	3.27	NS
	Control Group	-3.08*	0.62	P < 0.05	-4.59	-1.56	S
Control Group	Experimental Group I	4.70*	0.70	P < 0.05	2.98	6.42	S
	Experimental Group II	3.08*	0.62	P < 0.05	1.56	4.59	S
Based on estimated marginal means *. The mean difference is significant at the 0.05 level. b. Adjustment for multiple comparisons: Bonferroni.							

Table 4.3.19 shows the summary of the pretest and posttest diastolic blood pressure mean difference comparison of the participants before and after administering the anaerobic test (margaria or agility). The following pretest and posttest diastolic blood pressure mean values were obtained using the Sphygmanometer based on their group category; for Experimental Group I (95.10, 88.75), Experimental Group II (93.25, 89.85) and Control Group (92.80, 92.80) respectively. The results from the above table shows that there was a significant reduction in the posttest diastolic blood pressure mean scores of both the Experimental Group I and Experimental Group II, whereas there was no increase in the posttest diastolic blood pressure mean scores of the Control Group.

Table-4.3.20: Hypothesis 10: There is no Significant Difference in the Effect of Anaerobic Exercise on the Diastolic Blood Pressure of Women in Isiokpo, Rivers State (for N = 60)

ANCOVA Tests of Between-Subjects Effects							
Dependent Variable: Posttest							
Source	Sum of Squares	DF	Mean Square	F	P	Partial Eta Squared	Remarks
Corrected Model	189.67[a]	3	63.22	16.92	P < 0.05	0.48	S
Intercept	83.38	1	83.38	22.31	P < 0.05	0.29	S
Pretest	14.24	1	14.24	3.81	P < 0.05	0.06	S
Group	184.80	2	92.40	24.73	P < 0.05	0.47	S
Error	209.26	56	3.74				
Total	491452.00	60					
Corrected Total	398.93	59					
R Squared = 0.48(Adjusted R Squared = 0.48) Computed using alpha = 0.05							

The Table 4.3.20 shows the ANCOVA Tests between subjects effects, the remark column shows that the various P values and were juxtaposed with the alpha level of 0.05 which was used as the indicator to determine the level of significance of the results obtained while testing the effect of anaerobic exercise on the diastolic blood pressure of women in Isiokpo, Rivers State. The remark column for the

group contains either "S" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was less than the alpha level of 0.05 and statistically significance) or "NS" (meaning that the P value of the group that was engaged in the anaerobic exercise activities was greater than the alpha level of 0.05 and statistically not significant).

The result shows that the groups (Experimental Group I, Experimental Group II and Control Group) contained in the rows (intercept) had a statistically significance difference on the diastolic blood pressure (F=22.31, DF=1/56, P<0.05, S). Similarly, in the column (pretest) there was a statistically significance difference on diastolic blood pressure (F=3.81, DF=1/56, P<0.05, S) and also, in the interaction effect (group) there was a statistically significance difference on diastolic blood pressure (F=24.73, DF=2/56, P<0.05, S). Therefore, It was on this basis that the following hypotheses associated with the physiological performance variables of the women which states that; there will be no significant effect of anaerobic exercise on the diastolic blood pressure of women in Isiokpo, Rivers State was rejected whereas the alternate hypotheses of there will be significant effect of anaerobic exercise on the diastolic blood pressure of women in Isiokpo, Rivers State was accepted.

CONCLUSIONS

Based on the findings. Most women had sedentary life styles which predispose them to diseases or abnormal health conditions such as heart diseases, obesity among others. This sedentary life style affected their health negatively. It was therefore concluded that the aforementioned problems may be present because of lack of proper orientation of the values of active (regular) participation in cardiovascular fitness exercise programmes.

RECOMMENDATIONS

Based on the findings the following recommendations were made:

1. The use of anaerobic exercise should be recommended to women living sedentary life style for the reduction of cardiovascular diseases.

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