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Research Article

Effects of Aerobic Dance Exercise on Selected Physiological Variables and Body Composition of Clients with Substance Use Disorder

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Abstract

Purpose

The purpose of the study was to assess the effects of aerobic dance exercise on selected physiological variables and body composition of clients with substance use disorder in Mekelle rehabilitation center.

Methods

Thirteen (13) Male aged from 20 to 30 clients were selected from twenty-two (22) total population as subjects from substance rehabilitation center by using purposive sampling technique. The subjects were volunteered to actively participating in 12 weeks 3-day peer weeks' intervention and the body composition, selected physiological variables were tested prior to and after the training period. The study was formulated as a single group design, consisting of a pre-test and post-test. The collected data from the pretest and posttest was statistically analyzed by using descriptive and paired t-test. The 0.05 level of confidence was fixed to test the significance.

Results

The results revealed that aerobic dance exercise significantly improved resting heart rate, vo2 max, breath holding time and diastolic blood pressure than pre-test. Also 12-week aerobic dance exercise no significantly improves some physiological variables namely; respiratory rate, systolic blood pressure and body composition similarly. Then it was concluded that aerobic dance exercise is beneficial to rehabilitation for Substance use disorder. Based on the findings, the investigators recommended that the aerobic dance program should be introduced to substance rehabilitation center as one of the rehabilitation tools.

Introduction

Aerobic dance exercise and physical activities provide the individual with a number of lasting benefits as not only do they help to reduce depression and anxiety, but they also improve both physiological and psychological well-being, enhance work and recreation, and improve health [1,2].

Step-Aerobic is a sport consisting of stretching exercises with a tempo accompanied by music. Aerobic exercises are performed by adapting combinations of movements to music through a step platform. Research of the effects of such commonly used exercises on physical fitness parameters became more of an issue [3].

Use of substances such as alcohol, that leaves (Catha edulis) and tobacco has become one of the rising major public health and socio-economic problems worldwide. Recent trends indicate that the use of substances have dramatically increased particularly in developing countries [4].

The effects that different levels of aerobic exercise have on psychological well-being are less clear. However, the majority of research demonstrates that aerobic exercise produces similar psychological effects in people who participate in aerobic exercise at moderate levels, vigorous levels, or moderate and vigorous levels combined (Taylor M.K *et al.*2004).

About 230 million people, or 5 percent of the world's adult population, are estimated to have used an illegal drug at least once in their lifetime in 2010. Alcohol and other drug (Khat and tobacco) users number about 27 million, which is 0.6 percent of the world adult population (UNODC, 2014).

In Ethiopia, drugs such as khat, alcohol, Tobacco and to some extent other drugs like Marijuana are used at young age group of the population. Drug use and abuse increases the chance of having many problems at early age like risky sexual practices that causes failure in academic performance, in danger that are the future hope of the country and this will alienate the youth from their education. This affects the social, economic, and political aspects of the country directly and indirectly. Although the issue of Education in youngsters and drug use are closely interlinked. Much research is not done in order to tackle the problem. (Mahlet Manaye, 2011).

Exercise is a potential non-pharmacological treatment for addiction that targets systems implicated in both early and late stages of the addiction process (Pignataro RM, 2012). Exercise intervention may provide effective, low cost adjunct to substance abuse treatment and has secondary health benefits (e.g. privation of obesity and secondary diseases such as diabetes) Exercise has been proposed as an effective relapse privation intervention especially due to the potential number of positive physiological and psychological benefits in patients with drug abuse disorder [5].

Comparison of the measurement values of subjects before and after exercise program was made with paired t-test. Significance level was determined as $p<0.05$. At the end of study, a statistically significant decrease was seen body fat percentage, flexibility test and measurement test of anthropometric circumference in experimental group ($p< 0.05$). As a result, it could be said those twelve weeks of regular exercise program.

Objective

In this study, it is aimed to assess the effects of 12- week aerobic dance exercises on selected physiological variables and body composition of clients with substance use disorder in Mekelle rehabilitation center.

Methods

For the purpose of the study 13 clients with substance disorder men whose average ages were 20-30 (year) from total population of twenty center by using purposive sampling technique were selected for the study after inclusive and exclusive criteria which are as follows.

Inclusion Criteria

1. People living in Mekelle substance use disorder client's rehabilitation center. This center was founded in 2007 at Mekelle Town (Lache) under the Mekelle University School of Medicine collaborate with Meqomiya development organization (MCDO) and Hope Homminute Service (HCS) Nongovernmental organization (NGO).

2. Those who are physically fit and age group of 20-30 years were included.

3. Client with normal blood Pressure are included.

4. Client willing to participate voluntary throughout the study were included.

Exclusion Criteria

I. Participants with a history of central nervous system dysfunction, hemiparesis (paralysis of one side of the body) or any kind of postural deformities.

II. Client with Diabetic and cardiovascular disease.

III. Participant on either as prophylaxis, such as the use of antibiotics to prevent infections or as part of TB treatment.

IV. Three of risk factors those are series cardiac problem.

Tools, Instruments and Criterion Measures

Table 1: *Tools, instruments and criterion measures*

No	Variable	Testes/ Tools Administered	Unit of Measurements
Physiological Variables			
1	Resting heart rate (RHR)	Counting heart rate at radial artery	No. of beats
2	Blood pressure (SBP, DBP)	Sphygmomanometer	Mm/Hg
3	VO2 MAX	3 min step test	Ml/kg/min
4	Respiration rate	Stop watch	No of breath/min
5	Breathing hold time	Stop watch	Min
1	Body composition	BMI	Weight(Kg) Height^2 (M)^2

Training Protocol/ Training Program

12 weeks' aerobic dance training program

The aerobic dance session was lasted for 60 minutes including a warm-up, main session, rest and cool-down. The session involved an instructor performing to the class from the front. Participants followed the moves of the instructor. The warm-up comprised exercises designed to raise heart rate such dance steps and walking. This was followed by a stretching routine. The main session involved rhythmic movements such as stepping, lunges, knee lifts, and bicep-curls in addition to basis dance steps. It was designed to raise heart rate so that individuals exercised between 40 to 50% of their heart rate maximum. The cool-down included a series of stretching and rhythmic breathing exercises.

Table 2: *Month one training program*

Frequency	Mode of Exercise	Intensity of Exercise	Weeks							
			1st week		2nd week		3rd week		4th week	
			Time	Rest	Time	Rest	Time	Rest	Time	Rest
Day 1	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Low intensity (40-50% HRmax)	40 min	2 min	40 min	2 min	40 min	2 min	40 min	2 min
Day 2	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Low intensity (40-50% HRmax)	40 min	2 min	40 min	2 min	40 min	2 min	40 min	2 min

Day 3	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Low intensity (40-50% HRmax)	40 min	2 min	40 min	2 min	40 min	2 min	40 min	2 min

Table 3: *Month two training program*

Frequency	**Mode of Exercise**	**Intensity of Exercise**	**Weeks**							
Day 1	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Low intensity (40-50% HRmax)	1st week		2nd week		3rd week		4th week	
			Time	Rest	Time	Rest	Time	Rest	Time	Rest
			45 min	1 min	45 min	1 min	45 min	1 min	45 min	1 min
Day 2	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Low intensity (40-50% HRmax)	45 min	1 min	45 min	1 min	45 min	1 min	45 min	1 min
Day 3	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Low intensity (40-50% HRmax)	45 min	1 min	45 min	1 min	45 min	1 min	45 min	1 min

Table 4: *Month three training program*

Frequency	**Mode of Exercise**	**Intensity of Exercise**	**Weeks**							
Day 1	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Moderate intensity (50-70% HRmax)	1st week		2nd week		3rd week		4th week	
			Time	Rest	Time	Rest	Time	Rest	Time	Rest
			60 min	2 min	60 min	2 min	60 min	2 min	60 min	2 min
Day 2	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Moderate intensity (50-70% HRmax)	60 min	2 min	60 min	2 min	60 min	2 min	60 min	2 min
Day 3	Warming up, stretching exercise Tae bo, Zumba dance and cool down.	Moderate intensity (50-70% HRmax)	60 min	2 min	60 min	2 min	60 min	2 min	60 min	2 min

Participants were done aerobic dance exercise three days a week for 45 minutes during twelve weeks.

Administration of Test

First, the investigator meets the participants and give clear explanation about the pre-tasting and all about the training. After creating awareness, they have taken informed consent and signed properly. Finally, pretest and posttest of the subjects were taken as follows.

Resting Heart Rate

Purpose: To measure the resting heart rate of the clients.

Equipment's: Stopwatch, whistle

Procedure: The participants are seated upright position in a straight back chair they are rested, relaxed and comfortable. When the signal is given to participants are start counting their resting heart rate in the radial artery for 10 seconds. (N.B: to minimize error, they are learning for 3 separate days on how to measure their resting heart rate in the radial artery).

Scoring: The average number of beats for three trials is recorded.

Blood Pressure

Purpose: To measure the resting heart rate of the clients.

Equipment's: Sphygmomanometer, stereoscope, cuff

Procedure: The participants are seated upright position in a straight back chair with feet flat on the floor and left arm resting on table with elbow flexed and finally the following sequence were done.

Cuff around upper portion of left arm approximately heart level

Close air on bulb

Pump up to 200MmHg

Stereoscope placed on antecubital space below the cuff

Slowly release air from cuff

Scoring: First distinctive sound is measure as systolic blood pressure and complete disappearance of the sound is diastolic blood pressure and finally the score is recorded in MmHg indicated on sphygmomanometer scale.

Body Composition

Purpose: To measure height and weight in order to calculate body mass index which indicates the level of subjects located.

Procedure: BMI is calculated from body mass (M) and height (H). BMI = M / (H x H), where M = body mass in kilograms and H = height in meters. The higher the score usually indicating higher levels of body fat.

Equipment's: Scales and Stadiometer as for weight and height

Score: after the height and weight of the subjects acquired, by using this formula

BMI= weight/height^2

Maximum Oxygen Consumption (Vo2max)

3-minute step test

Purpose: To estimate maximal oxygen consumption

Equipment's: Reliable stop watch, 12-inch-high bench, 96 beats per minute metronome, audio player

Procedure: The researcher demonstrated the method how to step up and down in a steady state with the beats of metronome. Either of the two feet steps up during one beat, the other foot also steps up during next beat. After placing both feet on top of the bench during 3rd beat the foot that stepped earlier steps down first then by the 4th beat the other foot steps down. This procedure continues for 3 minutes. Immediately after 3 minutes the participant sits down and counts the pulse by putting index and middle finger on radial or carotid artery for 15 seconds and multiplied by 4. Vo2 max is computed with the following equation.

Scoring: vo2 max = 111.33- (0.42x step test pulse beats per minute) ml/kg/min

(http://www.topendsports.com/testing/tests/step-ymca.htm).

Respiration Rate

Respiration rate measurement does not require complex technology. A person respiratory rate is the number of breath you take per minute. The normal respiration rate for an adult at rest is 12 to 20 breaths per minute.

Propose: To measure the number of breaths per minute at rest for one minute.

Equipment's: Stop watch, pencil and recording paper.

Procedure: Individual's respiratory rate is calculated when he is at rest without the awareness that researcher was checking respirations in order to obtain a more reliable count. One cycle consists of one complete rise

and fall of the chest or the inhalation and exhalation of air. Researcher was observed the subjects' chest until researcher was seen rise and fall movement of the chest (side view).

Then researcher was count the number of times the chest rise for 15 seconds and multiply by 4 to get the total respiration rate in one minute.

Scoring: _____ Number of breath per minute (bpm)

(minutehttp://www.wikihow.com/Measure-and-Record-Respiratory-Rate).

Breath Holding Time

Purpose: To measure the ability of the subject to hold the breath for longer time.

Equipment's: A stop watch and a score sheet.

Procedure: The subject stand at ease and inhale deeply after which he/his hold breath for a length of time possible to He/his. The index finger of the dependent serves as an indicator to the investigator to know the start and end of the recording time. The thump and middle finger will be used to hold the nose to avoid letting the air through the nostrils. The subject will be requested not to let the air out by opening the mouth while recording the breath holding time.

Scoring: The time of holding the breath till one subject let the air out was clocked by using the stop watch to the nearest one tenth of a second as breath holding time.

(http://www.spearblog.com/2011/04/22/breath-hold-test/).

Ethical Considerations

Ethical approval was assured from Ethical committee of Mekelle University with reference no., ERC 0962/2017. The study was conducted by taking all ethical issues into considerations. Every aspect of the participants will be in huge confidentiality. First of all, participants will be briefed about the purpose/objectives and procedures of the study. All the activities were done in a serious care with all the experts. To give priority for the participants' welfare, major ethical consideration is made while conducting this study. Accordingly, the following ethical considerations were performed sequentially:

• First, the objectives of the study are made clear for all participants in the language they understand.

• Second, the issue of [how, where and when] to collect data is determined as per the participants' willingness.

• Third, all participants are informed about all the possible suffering they may experiences during the process of data collection procedures.

• Forth, all participants were informed about their right to stop participating in the study.

• Lastly, informed consent is obtained from all participants

Statistical Technique Employed

The study was formulated as a single group design, consisting of a pre-test and post-test. The collected data from the pretest and posttest was statistically analyzed by using descriptive and paired t-test in SPSS 20 paired t-test program. Detailed information was provided related to exercises prepared in practice. Body mass index used for body weight values, height, body mass index, of participants before and after exercise program.

Calibration control of testing tools used for measures was made before tests, and their reliability was tested.

Results

Arithmetic means, standard deviation values of 13 clients' participant men whose average ages were 20-30 (year) pertaining to their personal characteristics such as heart rates, vo2 max, respiratory rate, breath holding time, systolic blood pressure, diastolic blood pressure and body composition are presented in Table 5.

Table 5: *Demographic Characteristics of Participants before and after exercise program on Physiological Variables*

Paired Samples Statistics					
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**
Pair 1	Pre-Test Resting heart rate of subject	76.38	13	15.522	4.305
	Post-Test Resting heart rate of subject	66.00	13	8.196	2.273
Pair 2	Pre-Test Vo2 max of subject	74.6562	13	6.09373	1.69010
	Post-Test Vo2 max of subject	78.2615	13	4.96207	1.37623
Pair 3	Pre-Test Respiratory rate results of subject	22.23	13	5.480	1.520
	Post- Test Respiratory rate results of subject	22.15	13	5.742	1.593
Pair 4	Pre-Test Breath holding time	22.4577	13	9.23384	2.56101
	Post-Test Breath holding time	29.0400	13	8.62430	2.39195
Pair 5	Pre-Test Systolic blood pressure of subject	127.46	13	7.468	2.071
	Post-Test Systolic blood pressure of subject	121.85	13	10.327	2.864
Pair 6	Pre-Test Diastolic blood pressure of subject	76.00	13	8.534	2.367
	Post-Test Diastolic blood pressure of subject	67.54	13	7.579	2.102
Pair 7	Pre-Test Body composition of subject (BMI)	20.0554	13	2.33205	.64679
	Post-Test Body composition of subject (BMI)	21.2523	13	2.41977	.67112

Best values and measurements before and after exercises of clients with substance use disorder who participated in study were compared with paired samples test and independent samples t-test. Analysis results are seen on Table 6.

Table 6: *Comparison of physiological variables of participants before and after exercise program*

Paired Samples Test

		Paired Differences					T	Df	P value
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test and Post- Test Resting heart rate results of subject	10.385	11.012	3.054	3.730	17.039	3.400	12	.005
Pair 2	Pre-Test and Post-Test Vo2 max of subject	3.60538	5.86750	1.62735	-7.15108	-.05969	-2.215	12	.047
Pair 3	Pre-Test and Post-Test Respiratory rate results of subject	.077	3.593	.997	-2.094	2.248	.077	12	.940
Pair 4	Pre-Test and Post- Test Breath holding time results of subjects	6.58231	7.56530	2.09824	2.01064	11.15398	3.137	12	.009
Pair 5	Pre-Test and Post-Test Systolic blood pressure results of subject	5.615	9.794	2.716	-.303	11.534	2.067	12	.061
Pair 6	Pre-Test and Post-Test Diastolic blood pressure results of subject	8.462	8.637	2.396	3.242	13.681	3.532	12	.004
Pair 7	Pre-Test and Post-Test Body composition results of subjects	-1.19692	2.03217	.56362	-2.42495	.03110	-2.124	12	0.55

Accordingly, measurements of clients for per test before and after exercise are significantly different from each other ($p<0.05$). There was significant elevation determined for the participants' resting heart rate (.005), vo2 max (.047), breath holding time (.009), diastolic blood pressure (.004) values before and after exercise programs ($p<0.05$). However, some of the variables no meaningful differences were found ($p>0.05$) with respiratory rate (.940), systolic blood pressure (.061) and body composition (0.55). As a result of the study, it was thought that decreasing resting heart rate through aerobic dance trainings is important for rehabilitation process and protecting from different disease risk factors.

Discussions

The result of the present study reveals that the aerobic dance exercise for clients with substance use disorder in rehabilitation process had significantly improved the physiological and body composition variables after the 12 weeks of training. Besides, the analysis of the data indicated that there was a significant difference

pre-test and post-test on some selected dependent variables. More over post- test showed better results in the selected entire dependent variables than the pre-test. The results on the variables of the study are presented as follow;

Physiological Variables

Resting Heart Rate

The results of this study indicate that three times weekly aerobic dance exercise for a period of 12 weeks can yield significant effects on resting heart rate of clients with substance use disorder. The multiple mean comparisons in table 2 also proved that there were significant differences between the p value of pre-test and post-test showed a significant ($p < 0.005$). Which were statically lower than the confidence interval level of 0.000 at 0.05 level of confidence. This result also indicates that resting heart rate was reduced by aerobic dance exercise training program.

This change may be aerobic dance exercise significantly influences how the autonomic nervous system controls heart function. It increases parasympathetic activity and decreases sympathetic activity in the human heart at rest. Aerobic dance exercise -induced autonomic effects, coupled with a possible reduction in intrinsic heart rate, decrease resting heart rate. Long term aerobic training also decreases submaximal exercise heart rate by reducing sympathetic activity to the heart. The resting heart rate of those who exercise is also slower (both at rest and during exertions, will decrease) because less effort is needed to pump blood. The current findings are in compliance with a research conducted by [6].

Vo2 max

Finding of this study indicated that there was a significant change on the vo2 max after 12-week aerobic dance exercise training, it shows that there was significant increment in pre-test and post-test. Table 2 also shows that the mean difference values on vo2 max between the pre-test and post- test, showed a significant ($p < 0.047$). Which were statically lower than the confidence interval level of 0.000 at 0.05 level of confidence. In addition to this table 1 also shows that the, which were statically lower than the confidence interval level of -7.15108, -0.05969 and 0.000 at 0.05 level of confidence. It is concluded that there was significant difference on vo2 max among the pre-test and post-test. The result of this study is not agreed with [7].

Respiration Rate

The result of the study reveals that the pre-test and post-test had no significantly decreased the respiration rate of the subjects after the 12 weeks of the training. It is also evident from table 2 that the showed a significant ($p < 0.940$). Which were greater than the confidence interval level of 0.00 at 0.05 level of confidence. The mean change made by the pre-test and post-test showed statistically no significant difference amongst them. The major changes in the respiratory system from endurance training and aerobic dance exercise or or breathing exercise are an increase in the maximal rate of pulmonary ventilation, which is the result of increases in both tidal volume and respiration rate, and an increase in pulmonary diffusion at maximal rates of work, primarily due to increases in pulmonary blood flow, particularly to the upper regions of the lung The result of this study is not agreed with [8].

Breath Holding Time

There is additional evidence that there were positive effects on breath holding time due to 12 weeks aerobic dance exercise training. The table 2 also reveals that there was showed a significant ($p < 0.009$) significant differences between the means of pre-test and post-test, which were lower than the confidence interval level of 0.000 at 0.05 level of confidence. The result of present study shows that aerobic dance exercise was found to be better significantly in increasing the breath holding time of the subjects. This may be due to the improvement in the efficiency of respiratory muscles which increase the tidal volume and increase the number, size and metabolic capacity of mitochondria to increase consumption of oxygen by the cells respectively (K. Birch 2005). Your heart rate and breathing rate will become slower while resting because of the increased efficiency of your heart and lungs. Now you can hold your breath longer because more oxygen is available to your body with each breath. This study was comparable to the result that found by [9].

Systolic Blood Pressure

The result of the study reveals that the pre-test and post-test had no significantly decreased the systolic blood pressure of the subjects after the 12 weeks of the training. It is also evident from table 2 that the mean difference showed a significant ($p > 0.061$). which was greater than the confidence interval level of 0.00 at 0.05 level of confidence. The mean change made by the pre-test and post-test showed statistically no significant difference amongst them.

A progressive rise in systolic BP is observed during exercise as the workload increases, while diastolic BP remains near resting levels and may even decrease slightly. At peak exercise, systolic BP reaches approximately 200mmHg. However, in some individuals, systolic BP rises substantially higher than 200mmHg. This is referred to as an exaggerated BP response [10].

Regular physical exercise reduces blood pressure and broadly is recommended by current American and European hypertension guidelines [11].

Sedentary lifestyle brings with a number of serious health problems. Especially in middle age and later periods, depending on the physical decline, immobility, disordered eating resulted in many illness (high blood pressure, obesity, muscular weakness, posture hand disorders, flexibility, the weakening of the abdominal muscles consist of the difficulties with the digestive and excretory systems.

Regular exercise helps to develop the parts related to the physical fitness. Part of the physical fitness related with health are the cardiovascular endurance, muscle strength, muscular endurance, body composition, flexibility, and nerve muscle relief (Günay, 1999).

In this study, the part of exercise program basically including Aerobic dance exercises and generally develops of whole-body fitness has been structured.

Development of flexibility which is one of the important parameters of health-related physical fitness, following the exercise program we applied is a result of exercise program which is planned to be target specific.

In their study, Karacan and Çolakoğlu, determined that 12-week aerobic exercise resulted in similar positive changes in body composition of middle-aged women and young women who were applied run-walk exercise program for three days a week for 30 minutes during 12 weeks, and that there have been positive changes in blood lipids mostly in favor of middle-aged women (Karacan, Filiz, 2003).

In these studies performed, it was shown that the flexibility, abdominal muscle strength and muscle activity could be developed by Pilates exercises (Phrompaet, *et al.*, 2011).

Results of our study performed again had parallelism with literature available. In sedentary women, it's seen that significant developments were obtained in all the flexibility values (sit down-lie exercise, body, hyperextension, body lateral flexion, tests towards included in study with 12-week exercise program.

In a randomized controlled study on reliable cases, it was seen that 8-week pilates program applied two times a week for 45 minutes developed flexibility and increases body and pelvic movement (Kloubec, 2010).

It could be told that step-aerobic exercise had a positive effect on resting heart rate, pulse after a 5-minute walk, flexibility, anaerobic power, aerobic capacity, leg power, hand grip strength, body fat percentage and systolic blood pressure values (Kurt, *et al.*, 2010).

It is aimed to investigate the effects of eight-week basic step aerobics training on physical and motoric abilities of sedentary women aged 30-35. 15 sedentary women; aged 30-35 voluntarily participated in on 8-week basic step aerobics program. Age, height, weight, body fat percentage, body mass index, max V02, handgrip, systolic and diastolic blood pressure. Heart rate and vertical jump parameters were measured for 8 posts 8-week training programs (Kurt, *et al.* 2010).

According to data of Kurt, *et al.* (2010), no meaningful differences were found with the max VO2, systolic and diastolic blood pressure, handgrip, heart rate and vertical jump parameters while meaningful differences were found with the body weight, body fat percentage, body mass, index parameters at the level of $p<0.05$. As a result of the study, it was thought that decreasing body fat percentage through step aerobics trainings is important for protecting from cardiovascular risk factors.

Pepe, *et al.* (2010) aimed to investigate the effects of eight-week basic step aerobics training on physical and by motoric abilities of sedentary women aged 30-35.

For this study, 15 sedentary women, aged 30-35, voluntarily participated in an 8-week basic step

Aerobics training of Erciyes University Continuous Education Centre (ERSEM). According to data; no meaningful differences were found with the Max VO2, Systolic and Diastolic Blood Pressure, Handgrip, Heart Rate and Vertical Jump parameters, while meaningful differences were found with the Body Weight, Body Fat Percentage, Body Mass Index parameters at the level of $p<0.05$. As a result of the study, it was thought that decreasing body fat percentage through step aerobic trainings is important for protecting from cardiovascular risk factors (Pepe, *et al.*, 2010).

Baştuğ, Akandere,Yıldız, (2011) investigated the effect of 8-week aerobic exercise program on physical self-description values of women not doing exercise. 80 women not doing exercise regularly, having no special dietary program and having no health problem to prevent the application of exercise participated in the study voluntarily. An aerobic exercise program was applied to the research group for 45-55 minutes and 3 days a week at 50-60% intensity. The measurements of weight, body mass index, sub-dimensions of physical self-description scale such as appearance and self-confidence values were obtained before and after exercise.

It was reported that 8-week aerobic exercise program caused a significant decrease in body weight and body mass index values of sedentary women ($p<0.05$). It was also determined that 8-week aerobic Exercise positively affected body composition and physical self-description values of sedentary women (Baştug, Akandere, Yıldız, 2011).

Conclusions

Based on the major findings of the study, the following points are stated as conclusions.

1. The present study has shown that resting heart rate, vo2 max, breathing hold time and diastolic blood pressure of post- test was found better significant improvement than the pre-test.

2. The study showed that 12 week of aerobic dance exercise pre-test and post-test results on respiratory rate and systolic blood pressure was no significantly improved and body composition similarly.

3. It was recommended that aerobic dance exercise should adopt for clients with substance use disorder to achieve better physical and physiological health function during their substance rehabilitation process.

4. It was concluded from the results of the present study that body composition was not significantly improved due to the treatment when compared to post-test as well as pre-test.

Recommendations

Based on the results and findings as well as discussions of the research, the following

Recommendations are made.

1. As the result of study indicates, aerobic dance exercise help to improve selected physiological variables of the subjects. Therefore, it is recommended that this practice should be incorporated in to rehabilitation centers and hospitals.

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