ONLINE ISSN (2958-793X)PRINT ISSN (2960-1657)
Ethiopian Journal of Sport Science (EJSS)
Volume V, Issue I (2024),

Effects of Aerobics Dance Exercise on Selected Anthropometric Variables of Female Overweight University Students

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Abstract

This study aimed to examine the effects of aerobics dance exercises on selected anthropometric variables of overweight female students at Dilla University. The study employed a true experimental design, involving 60 female students aged 18-24. The study subjects were randomly divided into two equal groups, the experimental (n = 30) and the control groups (n = 30). The experimental group had taken aerobics dance training for 10 weeks with 3 sessions per week, each lasting 30 to 60 minutes. Pre- and post-test data were collected on weight, BMI, arm girth, waist circumference, hip circumference, and thigh girth before and after ten weeks from 6:00–8:00 AM. ANOVA was utilized to analyze the data. Following the intervention, the posttest mean weight was observed to be decreased in trainees from the experimental group (59.003±4.0476) compared to those from the control groups (62.603±4.3325) with a significance level of p<0.05. The mean BMI was found to be reduced in the experimental group (24.7103±.98802) than in control groups (25.6333±.71297), although this was statistically significant (p<0.05). Similarly, the mean arm girth was decreased for the experimental group (29.97±2.619) compared to the control groups (32.80±1.901), and was significant difference noted (p<0.05). The mean waist circumference was reduced and (80.17±5.414), for the experimental and (87.27±5.212), for the control groups, with significant differences between the groups (p<0.05). As for the hip circumference, the mean values showed differences between the experimental (99.00±4.267) and the control (100.13±2.933) groups on the post-test result and significant at (p<0.05) and the mean thigh girth was (56.30±2.718) for the experimental and

Keywords: *weight, BMI, arm girth, waist circumference, hip circumference, thigh girth*

Cited as: Tesfaye Moges Sorre Abiy Regasa Firisa and Nigusu Tegene Mulatu *(2024):* Effects of aerobics dance exercise on selected anthropometric variables of female overweight University Students*:Ethiopian Journal of Sport Science (EJSS) V.5 page 91-102:*

(54.53±2.837) for the control groups and it was significant (p<0.05). The findings indicate that aerobics dance training had a positive impact on the anthropometrical variables of young university female students. This emphasizes the importance of developing aerobics
dance training programs to improve various anthropometric variables. These outcomes are mainly pertinent for obese women seeking to reduce their body weight through training strategies.

Background of the study

Aerobic dancing is a choreographed routine that combines various dance moves with other rhythmic actions, like continuous stretching, leaping, skipping, and hopping, all performed to music (Patel et al., 2017). Sedentary people and heart patients can benefit from aerobic activities, and research suggests that even modest regular activity, such as a daily 20-minute brisk walk, might have positive health effects. (Fatima, 2004). Additionally, it was mentioned that exercise improves muscle strength and body composition, lowers the risk of falls, diabetes, coronary artery disease, joint pain, and depression, improves the quality of life, and lengthens life expectancy (Freeman et al., 2001). A thorough weight loss regimen and weight control include physical activity (Arslan, 2011). Numerous studies have demonstrated the positive impact of different aerobic physical activities on an individual's alterations in body composition and anthropometric features (Osei-Tutu & Campagna, 2005; Rahimi, 2006). Aerobic exercise events are used to reduce body mass and obesity, and thus to alter body alignment. (Jorgić et al., 2011; Pantelic et al., 2012; Milanovi et al., 2011). Steps, hops, twists, jumps, and other body movements are used as aerobic exercises to lower body weight and change body composition in addition to walking and running to music models (Pantelic et al., 2012).

According to research by (Adeela Rauf & Haq, 2021)**,** strength training benefits female students' body composition as well as their motor skills. Other author's research has also confirmed the impact of this kind of training on an individual's overall health state and the modification of morphological characteristics. (Holmerová et al., 2010; Viskić-Štalec et al., 2007; Zaletel et al., 2013). Because it indicates significant health disparities in cardiorespiratory fitness, waist circumference is becoming increasingly frequently employed as a practical and quick way

to screen for abdominal obesity (Barber et al., 2014).

In the latter part of the 20th century, dance aerobics and aerobic exercise to music became particularly popular, especially among women. One feature of this type of exercise is that everyone taking part in the music-assisted workout program performs certain actions at the same pace and rhythm, engaging various muscle groups simultaneously. Generally speaking, aerobic dancing activities were created as a way to improve physical fitness and performance while also reducing body composition (Kimura & Hozumi, 2012). A study by (Spirtovic et al., 2024) examined how a sample of 95 primary school pupils responded to a structured exercise set to music. The study's findings show that practically all of the morphological traits changed in a statistically significant way following the training session. (Grant et al., 2004) have determined that following an aerobic dance program, the body composition of obese women changes, and their functional skills increase depending on the training program used. (Kostic et al., 2006) has stated that dancing aerobic training offers enough cardiorespiratory demand to encourage female weight loss.

Examining the tangible outcomes and consequences of this kind of exercise on the body makes the study on the influence of aerobics dance on the changes in anthropometric traits in young university women. Therefore, the purpose of this study is to ascertain how a 10-week aerobics dance training program affects young overweight females' university students. To this end this study was to offer precise instructions and suggestions for aerobics dance practice to attain the intended outcomes.

Materials and Methods

Study design

pre-test post-test true experimental design was employed to compare the anthropometric variables of University female overweight students.

Study area

The study was conducted in the Gymnasium of the Department of sport science, University of Dilla.

Study population

The study targeted a population of overweight females who were students within the University of Dilla comprehnsive hospital, main and odaya'a campus. Poster advertisements were located for such volunteers with a thorough clarification of the objective of the study.

Intervention

The experimental group underwent aerobics dance treatment for 10 weeks with 3 sessions per week, each lasting 30 to 60 minutes, while the control group didn't get any treatment. The training interventions were conducted under the supervision of the investigator and consisted of specific exercises tailored to improve the selected anthropometric variables.

Selection Criteria

Young overweight female students age between 18 and 24 years of old with no known history of rheumatoid arthritis, cardiopulmonary, or disorders osteoarthritis of any form were selected for the study. Strictly, such participants were sure to be resident in Dilla University. Students with injuries or any known history of cardiovascular and/or cardiorespiratory illnesses were omitted from the study. Such people must not have commenced a form of knee or abdominal surgery as well. Volunteers that meet all criteria for selection were employed. A Physical Activity Readiness Questionnaire (PAR-Q). The PAR-Q was designed as a fitness appraisal form to determine participants' ability levels, safety and willingness to partake in physical activity prior to participation.

Sample size and sampling technique

Power analysis presented that getting a low effect size (0.2) at a power of .09 and .05 level of significance were employed for the study. Though the total number of females who willingly registered to participate in this study area was 75. Based on the medical history questionnaire as well as inclusion and exclusion criteria 15 participants were excluded and 60 overweight females who filled inclusion criteria were used as a sample by simple random sampling technique and they were randomly assigned to experimental and control groups by using the lottery method. Therefore, among the selected samples 30 were grouped into experimental and 30 were control groups.

Procedures

Data for the study was gathered twice, before the start of the training and following ten weeks of the training session. Every measurement and estimate of the anthropometric variables of individuals were conducted in their living and training institution during early morning sessions from 6:00 to 8:00 AM to reduce any disparities. So, weight was measured by digital or stadiometer weighting machine (Ubom, et al., 2018), and BMI, arm girth, waist circumference, hip circumference, and thigh girth, were measured by flexible tap (Ativie, et al., 2018).

Ethical Permission

The University of Dilla's research and ethical committee gave its approval to the project. Prior

to the experiment, each subject provided written informed consent. Participants could only take part if they fulfilled the requirements for inclusion and orally informed of all procedures and, if willing to participate, read and signed a written consent form.

Statistical Analysis

To ascertain whether all of the data were normal, the Pearson normality test was employed. Descriptive statistics were expressed as frequency (%) and mean ($\bar{X}$) ± standard deviation (SD) for continuous and categorical variables, respectively. The software SPSS version 20.0 was used to do statistical analysis to investigate the effects of aerobic dance on the chosen anthropometric factors. Analysis of variance (ANOVA), source of variance, sum of squares, degree of freedom, mean sum of squares, and F-ratio were all included in the analysis. Any variable was deemed statistically significant if its p-value was less than 0.05.

Results

Table 1 displays weight, BMI, arm girth, waist circumference, hip circumference, and thigh girth between study groups. The pretest mean weight was (62.983±4.0133) in the treatment and (62.543±4.5775) in the control groups, and the p-value was .694 and (P>0.05), and no significant difference. But the posttest mean was calculated (59.003±4.0476) in the treatment and (62.603±4.3325) in the control groups, and the p-value was .002 which implies a significant difference in the mean since the p-value was similar to the critical value of (P<0.05). The F-ratio on the pretest was .157 and 10.959* on the posttest on the degree of freedom (1 and 58). The experimental groups had better improvement results of weight mean in the posttest compared with the control groups.

The pretest mean in BMI was (26.3833±.90602) in the treatment and (25.6937±.47388) control groups, and the p-value was .000 and (P<0.05), which is a notable distinction between them. The mean of the posttest was (24.7103±.98802) in the treatment and (25.6333±.71297) in the control groups, and the p-value was .000 which implies a significant difference meanwhile the p-value was similar to the critical value of (P<0.05). The F-ratio on the pretest was 13.649* and 17.216* on the posttest on the degree of freedom (1 and 58). Thus, the treatment and control groups don't show better improvement in chest circumference in pretest and posttest results.

The pretest mean arm girth was (31.40±2.931) in the treatment and (32.90±2.057) in the control groups, and the p-value was .025 and (P>0.05) and no significant difference. However, the mean of the posttest was (29.97±2.619) in the treatment and (86.27±4.209) in the control groups, and the

p-value was .000 which implies a significant difference in the mean since the p-value was similar to the critical value of (P<0.05). The F-ratio on the pretest was 2.264 and 22.992* on the posttest on the degree of freedom (1 and 58). The treatment groups had better improvement results of arm girth mean in the posttest compared with the control groups.

The pretest means in waist circumference was (83.53±5.501) in the treatment and (86.87±5.224) in the control groups, and the p-value was .039 and (P>0.05), and no significant difference. However, the posttest mean was (80.17±5.414) in the treatment and (87.27±5.212) in the control groups, and the p-value was .000 which implies a significant difference in the mean result of the post-test while the p-value was similar to the critical value of (P<0.05).

The F-ratio on the pretest was 2.546 and 9.437* on the posttest on the degree of freedom (1 and 58). The treatment groups had better improvement results on waist circumference mean in the posttest compared with the control groups.

The pretest mean in hip circumference was (102.500±4.7832) in the treatment and (100.200±3.4681) in the control groups, and the p-value was .137 and (P>0.05), and no significant difference. However, the mean of the posttest was (99.00±4.267) in the treatment and (100.13±2.933) in the control group, and the p-value was .004 which implies a substantial change, although the p-value was (P<0.05). The F-ratio on the pretest was 2.546 and 9.437* on the posttest on the degree of freedom (1 and 58). The treatment groups had better improvement results on hip circumference mean in the posttest compared with the control groups.

The thigh girth pretest mean was (58.93±3.062) in the treatment and (54.40±2.774) in the control groups, and the p-value was .100 and (P>0.05), and no significant difference. However, the mean of the posttest was (56.30±2.718) in the treatment and (54.53±2.837) in the control groups, and the p-value was .017 which implies a substantial change, although the p-value was (P<0.05).

The F-ratio on the pretest was 36.115 and 6.064* on the posttest on the degree of freedom (1 and 58). The treatment groups showed better improvement in thigh girth mean in the posttest compared with the control groups.

Table 1

The Analysis Of Variance Of The Experimental And Control Groups on Anthropometric Variables

Variables	Experimental		Control		Df	F. Ratio		P-Value	
	Pretest M±Sd	Posttest M±Sd	Pretest M±Sd	Posttest M±Sd		Pre-Test	Post-Test	Pre-Test	Post-Test
Wgh	62.983±4.0133	59.003±4.0476	62.543±4.5775	62.603±4.3325	1, 58	.157	10.959*	.694	.002
BMI	26.3833±.90602	24.7103±.98802	25.6937±.47388	25.6333±.71297	1, 58	13.649*	17.216*	.000	.000
AG	31.40±2.931	29.97±2.619	32.90±2.057	32.80±1.901	1, 58	2.264	22.992*	.025	.000
WC	83.53±5.501	80.17±5.414	86.87±5.224	87.27±5.212	1, 58	5.792	26.774*	.039	.000
HC	102.500±4.7832	99.00±4.267	100.200±3.4681	100.13±2.933	1, 58	2.546	9.437*	.137	.004
TG	58.93±3.062	56.30±2.718	54.40±2.774	54.53±2.837	1, 58	36.115	6.064*	.100	.017

Wgh = *Weight, BMI = body mass index, AG = arm girth, WC = waist circumference, HC = hip circumference, TG = thigh girth, DF = degree of freedom*

Discussion

This study's objective is to investigate the effect of aerobic dance exercise on selected anthropometric variables of female overweight students. Our findings revealed that a ten-week aerobic dance exercise program was found to have a noteworthy impact on body weight. Our study's findings were in line with those of (Ativie, Aigbiremolen, et al., 2018b), who found that continuous fitness training over 10 weeks significantly reduced the mean body weight of overweight and obese females. Our findings were corroborated by a study (Pantelic et al., 2013) study showed how young women's body weight improved after twelve weeks of aerobic dancing training. Similarly, (Bellicha et al., 2021; Jorgić et al., 2011; Milanovi et al., 2011) aerobic training exercises can alter body composition by reducing body weight and body fat and confirmed our result.

Our findings are consistent with earlier studies that found that aerobic exercise intervention reduced the mean body mass index of Indian primary school students (Mahalakshmi et al., 2024). Similarly, our study's results supported a meta-analysis by Guerra and colleagues that demonstrated how well school-based physical activity programs work to reduce the prevalence of childhood obesity and overweight (Guerra et al., 2013). The current study's findings concurred with those of (Ativie, Aigbiremolen, et al., 2018b), who found that continuous exercise training followed by a 10-week break significantly lowered the mean body mass index (BMI) of overweight and obese women.

Our results showed that an aerobic dance training program lasting ten weeks had a substantial impact on upper arm circumference. This change might be due to the occurrence of fat oxidation at the particular site of the biceps and triceps under the influence of aerobic dance activity. This result is consistent with a

study conducted in 2023 by Natalia et al. on the impact of physical fitness on a few key anthropometric characteristics in elderly people. The outcome showed statistically significant variations in the anthropometric variable's upper arm circumference (Wołoszyn et al., 2023). Furthermore, Sigh et al. demonstrated a connection between depressive symptoms in older individuals and anthropometric measures, such as the upper arm muscle index. Additionally, the scientists demonstrated that the upper arm muscle serves as a more accurate health monitoring indicator (Singh et al., 2019). Similarly, an 8-week aerobic dance exercise showed improvement in mean post-exercise in sedentary overweight women and better resulted in upper arm girth (Çakmakçi et al., 2011).

Research has indicated that high-intensity endurance exercise training, as well as a combination of endurance and resistance training, can help reduce measures of abdominal adiposity in overweight adults (Dumortier et al., 2003; Manning, 2011). Our research aligns with earlier investigations. Waist circumference shows a considerable decrease in abdominal obesity after 10 weeks of exercise training. In keeping with our research (Arslan, 2011), which examined the impact of an eight-week step-aerobic dancing training program on middle-aged, obese, sedentary women's body composition metrics, notable variations in the individuals' waist circumference were discovered. Another study (Çakmakçi et al., 2011) that looked at how aerobic dancing exercise affected the body composition of overweight, sedentary women also confirmed our findings, showing substantial changes in waist circumference between the pretest and posttest as well as improvements in the experimental group's mean.

The study's findings indicate that aerobic dancing training significantly reduces the circumference of the hips in overweight female students. The findings of our investigation aligned with a study conducted by (Ativie, Aigbiremolen, et al., 2018b), which demonstrated a substantial difference in waist circumference between 10-week intervals and continuous exercise training. Fatma looked at how middle-aged, sedentary, obese women's hip circumference changed after an eight-week step-aerobic dancing exercise program. Significant variations in the respondents' hip circumference were seen following the step-aerobic dancing training session (Arslan, 2011).

In the present study, the intervention of 10 weeks of aerobic dance exercise three days a week for one hour has shown a significant reduction in thigh girth in overweight females. This change might be caused by the reduction of fat mass at the particular site due to the influence of aerobic dance activity. It is because the metabolic pathways involved in providing the energy for the activity utilize fat and carbohydrates as the primary fuels. In support of our result study by (Hedley et al., 2004) examining the body composition of individuals who perform a lot of aerobic training, such as dancing tend to have low amounts of body fat. Another study by (Amano et al., 2001) confirmed that aerobic exercise for 12 weeks for 30 minutes and

three days per week showed a change in the thigh girth of obese female subjects.

Conclusions

The results provide important new information on how well a 10-week aerobic dance exercise program works with young female university students on weight, body mass index, arm girth, chest circumference, waist circumference, hip circumference, and thigh girth. The favorable results are consistent with previous research, highlighting the potential of aerobic dance exercises to address overweight. Creating an awareness on the effect of aerobic dancing exercise should be encouraged for female overweight trainee students to decrease their body weight. However, because of the limitations of the study, the results should be regarded with caution, which include the relatively short intervention length and the concentration on a single university. Subsequent studies ought to investigate the long-term effects of aerobic dance exercise programs, taking into account different academic institutions, to provide complete approaches for tackling the suffering of young female obesity students at universities on a larger scale.

References

Adeela Rauf, S. K., & Haq, M. Z. ul. (2021). Effects of Strength Training on Physical Fitness and Obesity of College Girls of Yazman, Bahawalpur, Pakistan. *Sir Syed Journal of Education & Social Research*, *4*(2), 191–195. https://scholar.archive.org/work/ibkq2yifjvd6zas2tllzdng7k4/access/wayback/https://ojs.sjesr.org.pk/index.php/ojs/article/download/753/309

Amano, M., Kanda, T., Ue, H., & Moritani, T. (2001). Exercise training and autonomic nervous system activity in obese individuals. *Medicine and Science in Sports and Exercise*, *33*(8), 1287–1291. https://doi.org/10.1097/00005768-200108000-00007

Arslan, F. (2011). The effects of an eight-week step-aerobic dance exercise programme on body composition parameters in middle-aged sedentary obese women. *International SportMed Journal*, *12*(4), 160–168.

Ativie, R., Aigbiremolen, A., Ohwin, P., Okemuo, A., Odigie, O., Agono, J., & Igweh, J. (2018). Modulations of 8-Week Aerobic Dance Exercise on Selected Anthropometric Indicators in Overweight and Obese Females. *Journal of Applied Life Sciences International*, *16*(3), 1–8. https://doi.org/10.9734/jalsi/2018/38052

Ativie, R., Ubom, R., Awotidebe, T., Ossai, R., Odigie, O., Igweh, J., & Adedoyin, R. (2018). Impacts of 10 Weeks Interval and Continuous Exercise Training on Selected Anthropometric, Cardiovascular and Metabolic Indicators of Overweight and Obese Females. *Journal of Applied Life Sciences International*, *16*(4), 1–12. https://doi.org/10.9734/jalsi/2018/39891

Barber, J., Palmese, L., Chwastiak, L. A., Ratliff, J. C., Reutenauer, E. L., Jean-Baptiste, M., & Tek, C. (2014). Reliability and practicality of measuring waist circumference to monitor cardiovascular risk among community mental health center patients. *Community Mental Health Journal*, *50*(1), 68–74. https://doi.org/10.1007/s10597-012-9590-2

Bellicha, A., van Baak, M. A., Battista, F., Beaulieu, K., Blundell, J. E., Busetto, L., Carraça, E. V., Dicker, D., Encantado, J., Ermolao, A., Farpour-Lambert, N., Pramono, A., Woodward, E., & Oppert, J. M. (2021). Effect of exercise training on weight loss, body composition changes, and weight maintenance in adults with overweight or obesity: An overview of 12 systematic reviews and 149 studies. *Obesity Reviews*, *22*(S4), 1–13. https://doi.org/10.1111/obr.13256

B. Mahalakshmi, Chaudhary Anjana Jagashibhai, Amita Shilpa Gottlieb, N. Sivasubramanian, Padmavathi Parthasarathy, G.Ramalakshmi, P. J. (2024). Effect of aerobic exercise on anthropometric parameters among Indian primary school children. *Bioinformation*, *20*(2), 170–174. https://doi.org/10.6026/973206300200170

Çakmakçi, E., Arslan, F., Taşkin, H., & Çakmakçi, O. (2011). The Effects of Aerobic Dance Exercise on Body Composition Changes Associated with Weight Change in Sedentary Women. *Selçuk University Journal of Physical Education and Sport Science*, *13*(3), 298–304.

Dumortier, M., Brandou, F., Perez-Martin, A., Fedou, C., Mercier, J., & Brun, J. F. (2003). Low intensity endurance exercise targeted for lipid oxidation improves body composition and insulin sensitivity in patients with the metabolic syndrome. *Diabetes and Metabolism*, *29*(5), 509–518. https://doi.org/10.1016/S1262-3636(07)70065-4

Fatima, R. (2004). Aerobic exercises: their cardiovascular and other benefits. *Pak J Med Sci*, *20*(3), 259–265.

Freeman, D. J., Norrie, J., Sattar, N., Neely, R. D. G., Cobbe, S. M., Ford, I., Isles, C., Lorimer, A. R., Macfarlane, P. W., McKillop, J. H., Packard, C. J., Shepherd, J., & Gaw, A. (2001). Pravastatin and the development of diabetes mellitus: Evidence for a protective treatment effect in

the West of Scotland coronary prevention study. *Circulation*, *103*(3), 357–362. https://doi.org/10.1161/01.CIR.103.3.357

Grant, S., Todd, K., Aitchison, T. C., Kelly, P., & Stoddart, D. (2004). The effects of a 12-week group exercise programme on physiological and psychological variables and function in overweight women. *Public Health*, *118*(1), 31–42. https://doi.org/10.1016/S0033-3506(03)00131-8

Guerra, P. H., Nobre, M. R. C., da Silveira, J. A. C., & de Aguiar Carrazedo Taddei, J. A. (2013). The effect of school-based physical activity interventions on body mass index: A meta-analysis of randomized trials. *Clinics*, *68*(9), 1263–1273. https://doi.org/10.6061/clinics/2013(09)14

Hedley, A. A., Ogden, C. L., Johnson, C. L., Carroll, M. D., Curtin, L. R., & Flegal, K. M. (2004). Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. *Journal of the American Medical Association*, *291*(23), 2847–2850. https://doi.org/10.1001/jama.291.23.2847

Holmerová, I., MacHácová, K., Vanková, H., Veleta, P., Jurasková, B., Hrnciariková, D., Volicer, L., & Andel, R. (2010). Effect of the exercise dance for seniors (EXDASE) program on lower-body functioning among institutionalized older adults. *Journal of Aging and Health*, *22*(1), 106–119. https://doi.org/10.1177/0898264309351738

Jorgić, B., Pantelić, S., Milanović, Z., & Kostić, R. (2011). The effects of physical exercise on the body composition of the elderly: a systematic review. *Physical Education and Sport*, *9*(4), 439–453. http://facta.junis.ni.ac.rs/pe/pe201104/pe201104-09.pdf

Kimura, K., & Hozumi, N. (2012). Investigating the acute effect of an aerobic dance exercise program on neuro-cognitive function in the elderly. *Psychology of Sport and Exercise*, *13*(5), 623–629. https://doi.org/10.1016/j.psychsport.2012.04.001

Kostic, R., Duraskovic, R., Miletic, D., & Mikalacki, M. (2006). Changes in the Cardiovascular Fitness and Body Composition of Women Under the Influence of the Aerobic Dance. *Physical Education & Sport*, *4*(1), 59–71. http://articles.sirc.ca/search.cfm?id=S-1032009%5Cnhttp://ezproxy.library.yorku.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=sph&AN=SPHS-1032009&site=ehost-live%5Cnhttp://www.ni.ac.yu/Facta

Manning, K. (2011). Effects Of Exercise Training On Fat Oxidation In Untrained Overweight And Obese Females. In *Medicine and science in sports and exercise*.

Milanovic, Z.; Sporis, G.; Pantelic, S.; Trajkovic, N. & Aleksandrovic, M. (2012). The Effects of Physical Exercise on Reducing Body Weight and Body Composition of Obese Middle-Aged People. *HealthMED*, *6*(6), 2175–2012.

Milanovi, Z., Panteli, S., Trajkovi, N., & Sporiš, G. (2011). *Basic Anthropometric and Body Composition Characteristics in an Elderly Population :* *9*(2), 173–182.

Osei-Tutu, K. B., & Campagna, P. D. (2005). The effects of short- vs. long-bout exercise on mood, VO2max., and percent body fat. *Preventive Medicine*, *40*(1), 92–98. https://doi.org/10.1016/j.ypmed.2004.05.005

Pantelic, S., Milanovic, Z., Sporis, G., & Stojanovic-Tosic, J. (2013). Effects of a Twelve-Week Aerobic Dance Exercises on Body Compositions Parameters in Young Women. *International Journal of Morphology*, *31*(4), 1243–1250. https://doi.org/10.4067/S0717-95022013000400016

Patel, H., Alkhawam, H., Madanieh, R., Shah, N., Kosmas, C. E., & Vittorio, T. J. (2017). Aerobic vs anaerobic exercise training effects on the cardiovascular system. *World Journal of Cardiology*, *9*(2), 134–138. https://doi.org/10.4330/wjc.v9.i2.134

Rahimi, R. (2006). Effect of Moderate and High Intensity Weight Training on the Body Composition of Overweight Men. *Physical Education and Sport*, *4*(2), 93–101.

Cited as: Tesfaye Moges Sorre Abiy Regasa Firisa and Nigusu Tegene Mulatu *(2024):* Effects of aerobics dance exercise on selected anthropometric variables of female overweight University Students*:Ethiopian Journal of Sport Science (EJSS) V.5 page 91-102:*

Singh, K., Singh, S. P., Kaur, G., & Bose, K. (2019). Association of body mass index and upper arm body composition with depressive symptoms in old age home and family based elderly. *Homo*, *70*(2), 155–162. https://doi.org/10.1127/homo/2019/1054

Spirtovic, O., Capric, I., Stankovic, M., Djordjevic, D., Corovic, M., Katanic, B., Jelaska, I., & The, I. (2024). The Effects of Step Aerobics on Anthropometric Characteristics Transformation and Body Composition in Young Females. *Int. J. Morphol*, *42*(5), 1423–1428.

Viskić-Štalec, N., Štalec, J., Katić, R., Podvorac, D., & Katović, D. (2007). The impact of dance-aerobics training on the morpho-motor status in female high-schoolers. *Collegium Antropologicum*, *31*(1), 259–266.

Wołoszyn, N., Brożonowicz, J., Grzegorczyk, J., Leszczak, J., Kwolek, A., & Wiśniowska-Szurlej, A. (2023). The Impact of Physical Exercises with Elements of Dance Movement Therapy on Anthropometric Parameters and Physical Fitness among Functionally Limited Older Nursing Home Residents. *International Journal of Environmental Research and Public Health*, *20*(5), 1–17. https://doi.org/10.3390/ijerph20053827

Zaletel, P., Gabrilo, G., & Perić, M. (2013). The training effects of dance aerobics: A review with an emphasis on the perspectives of investigations. *Collegium Antropologicum*, *37*(2), 125–130. http://www.ncbi.nlm.nih.gov/pubmed/23914499

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Cited as: Tesfaye Moges Sorre Abiy Regasa Firisa and Nigusu Tegene Mulatu *(2024):* Effects of aerobics dance exercise on selected anthropometric variables of female overweight University Students*:Ethiopian Journal of Sport Science (EJSS) V.5 page 91-102:*