

The effects of combined (aerobics and stretching) exercise on selected health related physical fitness in the case of wolaita sodo university gymnasium staff participants.

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ABSTRACT

The study was designed to investigate the effect of combined (aerobics and stretching) exercises on selected health related physical fitness in the case of wolaita sodo university gymnasium staff participants who were subjected to similar intensity, duration, frequency, and type of exercise. The research applied experimental research design. For this study combined exercise (aerobics and stretching) 3days per week for 10 weeks was given as a training for 24 individuals who are participating in the gymnasium of wolaita sodo university. Participants were selected by using available sampling techniques. For this study there was no control group and criteria for any grouping. Individuals were included as a whole in to the experiment. Twenty four individuals were selected for the study. The measurement was taken two times that is before training and after training. To collect the data for this study the height weight measuring calibrated machine, plastic tape and skin fold caliper were used. The data collected from the study was analyzed using SPSS version 25 software. The paired sample t test was used for the study to compare pre-training, and post training measurements. Based on the experimental result of the study, Training of combined (aerobic and stretching) exercise has very good contribution for improving body composition (reduction of weight and BMI as well as levels of adipose tissue fat thickness) significantly. The result of this study indicated that combined (aerobic and stretching) exercise is more efficient to improve the flexibility of individuals. The study also indicated that the change that has been seen on flexibility was more significant than the change on the body composition of the participants.

KEY WORDS- Aerobic, BMI, Body weight, Flexibility, Physical fitness, stretching

INTRODUCTION

The world wide problem throughout is now the increasing of individuals body weight due to fat accumulation more than body need. This increase of body fat conversely has also so many health problems behind it. As it is known throughout the world the use of technological equipments and materials and also machines are the main contributors of the accumulation of more fat. In addition, the life style including the nutritional habit of individuals in relation to daily work type are the main factors of increasing body fat which leads for decreasing of health related and skill related physical fitness's. From these fitness problems of human body increasing body weight, decreased flexibility, increased/ bulged physical appearance which are the cause of cardiovascular diseases like increased blood pressure and diabetes.

The main solution now a day's most researches are recommending for such non communicable and worldwide problem is having participation in regular physical activity. According to [1], People of all ages can improve the quality of their lives and reduce the risks of developing coronary heart disease, hypertension and some cancers with ongoing participation in

moderate physical activity and exercise. Exercise can help blood lipid abnormalities, diabetes and obesity. Aerobic physical activity can also help to reduce blood pressure.

Physical activity is important for fitness; it increases functional capacity through improvements in maximal oxygen consumption (V_{O2max}), body composition, muscular strength and endurance, and flexibility. Exercise training is also an important component of preventive and rehabilitative programs designed to address metabolic and cardiovascular diseases, as well as orthopedic injuries and musculoskeletal disorders. Physical activity has been shown to substantially reduce the risk of several controllable and degenerative diseases and to improve both the quality of life and longevity [7].

The physical activity intervention improved the quality of life in the areas of depressed mood, physical functioning, and physical role limitation, and decreased the frequency of nighttime hot flushes [9].

Therefore, the application of exercise for the problem of having improper body composition, reduced blood pressure and flexibility, increased cardiovascular diseases as well as having high adipose tissue fat accumulations will be the main solution with

proper recommendation and guidance. Standing from these, the research designed to investigate the effects of combined exercise (aerobics and stretching) exercise on flexibility and body composition in the case of wolaita sodo university gymnasium

Research Methodology

Study Design

The research applied experimental research design. For this study combined exercise (aerobics such as aerobic dance with and without stepper for 30-40 minutes, running on the treadmill for 20 minutes and bicycling for 10 minutes and stretching both dynamic and static stretching for 15-20 minutes) 3days per week for 10 weeks was given as a training for 24 individuals who are participating in the gymnasium of wolaita sodo university. Participants were subjected to similar intensity, duration, frequency, and type of exercise. The measurement was taken two times that is before training and after training.

Sampling technique and sample size

This study applied the available sampling technique for selection of the participants because the number of the participants in the gymnasium was manageable and enough to include all of them. By using this technique the researcher selected 24 individuals for the

staff participants. Specifically this research investigated the relation of aerobic and stretching exercise with reduction of BMI and subcutaneous fat as well as increasing flexibility of the university communities.

study. Participants were selected by using available sampling techniques. For this study there was no control group and criteria for any grouping. Individuals were included as a whole in to the experiment who was 8 females and 16 male participants

Data collection materials

To collect the data for this study the height weight measuring calibrated machine (to take the height and weight for calculation of BMI), plastic tape (to measure the flexibility) and skin fold caliper (to measure subcutaneous fat accumulation at a specified site) were used.

Data analysis method

The data collected from the study was analyzed using SPSS version 25 software. The paired sample t test was used for the study to compare pre-training, and post training measurements of all designed parameters at significance level $p < 0.05$. The comparison was made between pre-training and post training.

RESULTS AND DISCUSION

Analysis of body composition

Table1. Paired Differences of body weight (kg), body height (m), and BMI (kg/m²)

Parameters	N	Mean	Std. Deviation	Std. Error Mean	Paired Differences		
					Mean	Std. Deviation	Sig.
Weight before training	24	76.29	13.07	2.67	2.65	1.26	.000
Weight after training	24	73.65	12.97	2.65			
Height before training	24	1.68	.08	.02	-	-	-
Height after training	24	1.68	.08	.02			
BMI- before training	24	26.91	3.77	.77	.95	.46	.000
BMI- after training	24	25.96	3.71	.76			

As it is shown from the above table (table 1) the body weight, height and BMI were analyzed and interpreted through comparing test before training and after training. from the analysis it is indicated that the weight of the participants was reduced by 2.65 ±1.26 KG with the significance value of zero (0.000) and similarly, their BMI has been reduced by 0.95 ± 0.46 kg/m² with the

significance value of zero (0.000) during ten week training of combined exercise. The value of the height was not changed as it is known that height cannot be changed within this period as well as the participants were elder individuals. Therefore, it was taken for calculation of BMI. The use of aerobic and stretching exercise had very good reduction effect on the individual's weight that is having over weight and obesity problems.

Analyses of skin fold measurement for adipose tissue fat thickness

Table2. Paired Differences of super iliac, abdominal, sub scapular and triceps adipose fat (mm)

parameters	N	Mean	Std. Deviation	Std. Error Mean	Paired Differences		
					Mean	Std. Deviation	Sig.
Super iliac before training	24	29.04	8.17	1.67	1.05	8.09	.530
Super iliac after training	24	27.99	9.91	2.02			
Abdominal before training	24	27.88	8.19	1.67	2.15	4.71	.036
Abdominal after training	24	25.73	8.01	1.63			
Sub scapular before training	24	25.95	9.17	1.87	5.13	3.46	.000
Sub scapular after training	24	20.82	9.30	1.90			
Triceps before training	24	20.08	9.54	1.95	3.97	3.46	.000
Triceps after training	24	16.11	8.02	1.64			

The above table shows us the change that occurred at the site of super iliac adipose tissue fat was not significant that it only decreased 1.05 ± 8.09 mm of thickness with significance value of .53 (which is insignificant) and there was a big difference of reduction at this site of the body among individuals. But the rest sites of the measured body site for reduction of adipose tissue fat were significant with reduction of 2.15 ± 4.71 mm at their abdominal fat, 5.13 ± 3.46 mm at the sub scapular fat and $3.97 \pm$

3.46 mm from the triceps fat thickness by 0.036, 0.000, and 0.000 significance values respectively.

The change or the reduction of fat on the sites of upper body parts is greater and more significant than that of the lower (abdominal and hip) body parts as shown from the analysis. Therefore, the improvement of body in terms of fat content and posture around the hip and abdomen is difficult and needs more time and consistency with

exercise as well as it may need selection and specification of trainings.

Analysis of sit and reach measurement for flexibility

Table3. Paired differences of sit and reach (cm) test

parameters	N	Mean	Std. Deviation	Std. Error Mean	Paired Differences		
					Mean	Std. Deviation	Sig.
Sit and reach before training	24	3.50	8.12	1.66			
Sit and reach after training	24	9.46	6.37	1.30	5.96	3.94	.000

The table indicated that by giving ten week combined exercise program the flexibility of the participants was increased by 5.96 ± 3.94 cm at with the significance value of

zero (0.000). As we can understand from the table the change in terms of flexibility can be considered as good change of the participants' health related physical fitness.

Conclusion

Based on the experimental result of the study, the following conclusions were made; Training of combined (aerobic and stretching) exercise has very good contribution for reduction of weight and BMI significantly. The result of this study indicated that combined (aerobic and stretching) exercise is more efficient to improve the flexibility of individuals. the study also indicated that considerable

differences have been observed on reductions of body adipose tissue fat level particularly the upper body parts were more sensitive than the lower body (hip and abdominal) parts for the change by the training. Again from the study it can be conclude that the change that has been seen on flexibility was more significant than the change on the body composition of the participants.

REFERENCES

- [1] Aafid Gulam, Need, (2016). Importance and Benefits of exercise in daily life. *International Journal of Physical Education, Sports and Health*. 3(2): 127-130.
- [2] Adriana Ljubojević, Vladimir Jakovljević, and Milijana Popržen, (2014). Effects of zumba fitness program on body composition of women. *Sport logia* 10(1), 29-33.
- [3] Bo-Ae Lee, Jong-Gyun Kim, Deuk-Ja Oh, (2013). The effects of combined exercise intervention on body composition and physical fitness in elderly females at a nursing home. *Journal of Exercise Rehabilitation*. 9(2):298-303
- [4] Bojan Jorgic, Saša Pantelic, Zoran Milanovic, Radmila Kostic, (2011). The effects of physical exercise on the body composition of the elderly: a systematic review. *Physical Education and Sport*. Vol. 9, N Review article 4, Special Issue, pp. 439 – 453
- [5] Hamid Arazi, Hassan Faraji, Mahdi Ghahremani Moghadam and Ali Samadi, (2011). Effects of concurrent exercise protocols on strength, aerobic power, flexibility and body composition. *Kinesiology* 43(2011) 2:155-162.
- [6] Jack Rejeski W. and Shannon L. Mihalko, (2001). Physical Activity and Quality of Life in Older Adults. *Journals of Gerontology: SERIES A*. Vol. 56A (Special Issue II):23–35.
- [7] Michael L. Pollock, Matthew S. Feigenbaum, and William F. Brechue, (1995). Exercise Prescription for Physical Fitness. 47, 320-337.
- [8] Pereira A., A. M. Costa, M. Izquierdo, A. J. Silva, M. C. Marques, J. H. H. Williams, (2013). Combined strength and step aerobics training leads to significant gains in maximal strength and body composition in women. *The journal of sports medicine and physical fitness*. 53(Suppl. 1 to No. 3):38-43.
- [9] Reetta Rutanen, (2017). Physical Exercise, Work Ability and Quality of Life in Middle-aged Women. Short- and long-term effects of a randomized controlled intervention.
- [10] Yasmina Najafnia, Ebrahim Bararpour, Babak Amirinejad, Hossein Nakhaee, (2013). Effects of 8-week step aerobic exercise on women's physiological characteristics, body fat percentage, and quality of life. *International Journal of Sport Studies*. Vol., 3 (12), 1335-1341,

- [11] Izquierdo, M., Ibanez, J., Häkkinen, K., Kraemer, W.J., Larrion, J.L., & Gorostiaga, E.M, (2004). Once weekly combined resistance and cardiovascular training in healthy older men. *Medicine and Science in Sports and Exercise*. 36, 435–443.

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