

Effect of Tae-bo Exercises Implemented on Sedentary Women, on Some Physical and Physiological Parameters

Mine TURĞUT¹,
Serkan Necati METİN²

¹Research Assist., Bartın University,
Faculty of Sport Sciences, Bartın, Turkey,
minetrgt@gmail.com

² PhD Student, Sakarya University of
Applied Sciences, Faculty of Sport
Sciences, Sakarya, Turkey,
serkanmetin1985@windowslive.com

Abstract: The purpose of this study is to investigate the effect of eight weeks Tae-bo exercises implemented on sedentary women, on some physical and physiological parameters. 32 volunteer sedentary women were involved in the said study whose age average is $28,31 \pm 4,79$.

32 volunteer sedentary women were involved in the investigation group, whose age average was $28,31 \pm 4,79$ years and height average was $163,17 \pm 3,93$ cm. Body weight before and after the exercises was taken, some circumference measurements were made and blood samples were taken on an empty stomach basis, in pre-determined healthcare organizations, in a proper laboratory environment by competent people. Paired Sample T Test was implemented to compare values before and after the exercise with descriptive statistics by using SPSS 22.0 software during the analysis of obtained data. A significant difference was determined in between blood lipids Triglyceride, HDL, LDL and total cholesterol levels before and after the implemented resistance exercises in the direction of obtained findings ($p > 0,05$). In the same way, a significant and positive change was determined in between preliminary test and last-test measurements. ($p > 0,05$). Finally, it is observed as a result of our investigation that implemented tae-bo exercise program made an important remediation physiologically for Sedentary women. At the same time, it can also be seen from our findings that it changed circumference measurements physically in a positive way. On the basis of these findings, Tae-bo exercises are thought to be a preferable exercise program to reach a healthy body-mass index, and besides, to be protective for lots of diseases which would be caused by the cardiovascular system.

Keywords: *Tae-bo Exercise; Blood Lipids and Circumference Measurements.*

How to cite: Turğut, M., Metin, S.N. (2019). Effect of Tae-bo Exercises Implemented on Sedentary Women, on Some Physical and Physiological Parameters. *Revista Romaneasca pentru Educatie Multidimensionala*, 11(4), 278-287. doi:10.18662/rrem/169

1. Introduction

When contemporary and modern life understanding is examined, the inevitable reality is that the motionless life style is a dangerous 21st century trend. Humankind has been limiting the mobility ratio every passing day a little bit more, together with the opportunities offered by technological products. Regrettably, the physical inactivity effect of the said technological improvement on human beings made them fight with cardiovascular system diseases. For that reason, exercises are inevitable for individuals' willing to stay healthy and continuance of their recovery.

Exercises are continuous activities planned, structured, repeatable and aiming to develop one or more than one elements of physical fitness (Yeşil & Altıok, 2012). Exercises are effective for burning fats of our body from the perspective of energy provision and prevent excessive loss of muscular tissues during weight training (Janssen, Fortier, Husson, & Ross, 2002). Again, it is communicated that lots of exercises, physical activities affect fats and carbohydrate metabolisms in a positive way and that it causes moderate decreases in body weight, fat reserves (Özer, Bozdağ, & Pancar, 2017), total cholesterol and triglyceride (Tran & Weltman, 1985). Tae-bo exercises are also an example for this physical activity group.

Tae Bo, which means Full Awareness Excellent Body, was developed and implemented by Billy Blanks towards the end of 1980s (Perez & Greenwood-Robinson, 2009; Greer, 2000). Tae-Bo is an entertaining and highly type of effective aerobic training composed of the mixture of taekwondo, karate, boxing, ballet and hip-hop dance and made by music. Tae-bo exercises, being with music and a specific tempo in rhythmic way, entertaining and various physical activities make the exercise enjoyable and long lasting (Tekin, Tekin, Aykora, & Çalışır, 2018). Aerobic is an entertaining type of activity made with music, implemented also for the purpose of losing weight and stimulating muscle groups intensely (Tortop, Ön, & Ögün, 2010).

Tae-bo, which is a type of aerobic exercise, improves metabolic syndrome complications and muscle system, and besides, it is the most effective type of exercise among studio workouts; affecting coordination, balance and flexibility in a positive way. Tae-bo exercises ensuring 500-800 calories lost as a result of a 60-minutes workout are more effective than traditional aerobic workouts where 300-400 calories may be burnt (Hižnayová, 2013; Greer, 2016).

In this regard, the purpose of our investigation is to investigate the effect of Tae-bo exercises implemented on sedentary women, on some physical and physiological parameters.

2. Material and Method

2.1. Subjects

Preliminary test-last-test model is used in the investigation. It is asked to the participants before the investigation that whether they have any kind of health problem or not. 32 volunteer sedentary women, who don't have any health problem, go to a sports center in Zonguldak regularly, whose age average is $28,31 \pm 4,79$ years, are involved in the investigation. Bioelectrical impedance analyzer (TANITA TC-418, USA) was used to determine weight and fat percentage measurements of participants. No diet program was applied to the participants within the course of the study.

2.2.Procedure

2.2.1. Blood Lipid Measurement Tests:

Participants went to a pre-determined health organization, before their 90 minutes Tae-bo exercises and after exercises they made 3 times a week and totally for 8 weeks, in the morning on an empty stomach, for blood measurement to be made by competent people in a proper laboratory environment. Blood values; complete blood count measurement was made with Backman Coulter STKS device and LDL, HDL, total cholesterol and triglyceride values were acquired.

2.2.2. Circumference Measurements

Shoulder Circumference: Shoulder circumference is measured from the bottom of acromion, the most specific region of deltoids, in a standing position and when arms stay in lateral position (Son, 2017)

Waist Circumference: Waist circumference measurement is made by using tape from the point where the body recesses the most at the waist region (Akın, Tekdemir, Gültekin, Erol, & ve Bektaş, 2013).

Hip Circumference: It is measured from the front at the symphysis pubis level and from the back at the maximal outgrowth level of hip muscles (Tamer, 2000).

Breast Circumference: Breast circumference measurements are made by placing the tape when the body is in upright position, feet is open at the shoulder width level, 2,5 cm above nipples and when arms are open laterally and then arms are lowered and measurement is made by making a half breath out and measurements are recorded in cm. (Zorba, 2001).

Arm Circumference: Measuring person stays at the right of the sportsman who is looking ahead at the standing upright position. While arms are hung down, circumference measurement is made from the most congested part of the front arm at the proximal (Günay, Tamer, & Cicioğlu, 2013).

Leg Circumference :Measuring person stays at the right of the sportsman who is at standing upright position and when two feet touches the floor equally. Circumference measurement is made at the ending point of hip folding (Günay et al., 2013, p. 572)

2.2.3. Body Mass Index (BMI)

Body composition can also be expressed as the combination of body fat mass and fat-free mass (Arslan et al, 2001). Individuals were evaluated with the device of TANİTA model by depending on basic conditions of BIA (Bioelectrical Impedance Analysis) in order to determine fat percentage measurements of participants, in our investigation.

2.2.4. Exercise and Workout Program: Workout program of 8 weeks is prepared as 3 days per week and composed of 90 minutes medium level Aerobic-Cardio Tae-bo exercises. Intensity was kept at a tempo where women feel themselves good (pulse number will be in between 130-150). In each and every workout period, exercises shown in Table 1 are made after 10 minutes of heating up. Each workout is completed with 5 minutes cooling down exercises.

Table 1: Exercises, Method and Durations:

Exercises	Duration/number	Exercises	Duration/number
Straight Kick	3Sets/8 Repeats	Low Kick	3Sets/8 Repeats
Side Kick	3Sets/8 Repeats	Direct Punch	3Sets/8 Repeats
Back Kick	3Sets/8 Repeats	Crochet Punch	3Sets/8 Repeats
High Kick	3Sets/8 Repeats	Uppercut Punch	3Sets/8 Repeats
Middle Kick	3Sets/8 Repeats	Mix combination	25 Minutes

2.3. Data Analysis

Data obtained from the investigation were analyzed by using SPSS 22.0 software. Paired sample t test among parametric tests were used in order to be able to reveal the difference in between preliminary test and last test values of the investigation group.

3. Results

Table 2- Physical Properties of Women Involved in the Investigation

	N	Average	St. deviation	Min.	Max
Age (years)	32	28,31	4,7	21	40
Length (cm)	32	163,18	3,9	158	172

Age average and length average of women involved in the investigation group was determined as $28,31 \pm 4,79$ and $163,17 \pm 3,93$, respectively.

Table 3- Differences in Between Some Circumference Measurement Values Average of Participants Before and After Tae-bo Exercises

Measurements (cm)	N	Preliminary Test	Last Test	Difference in Averages	t	p
Shoulder Circumference	32	115,31 \pm 2,54	106,50 \pm 3,50	8,81	10,35	0,000**
Breast Circumference	32	104,84 \pm 3,53	101,09 \pm 3,31	3,75	3,82	0,001**
Waist Circumference	32	95,53 \pm 2,19	88,12 \pm 4,13	7,40	7,49	0,000**
Arm Circumference	32	34,50 \pm 2,14	32,31 \pm 1,74	2,18	4,59	0,000**
Hip Circumference	32	114,71 \pm 2,83	108,06 \pm 3,68	6,65	11,15	0,000**
Leg Circumference	32	65,06 \pm 2,51	61,96 \pm 1,59	3,09	5,11	0,000**

p<0,01**, p<0,05*

When Table 3 is evaluated, it is observed that tae-bo exercises create meaningful differences for the women in the investigation group, in terms of shoulder, breast, waist, arm, hip and leg circumferences (p<0,01). This obtained result shows that implemented exercise program affected circumference measurements of participants in a positive way and that high efficiency was resulted.

Table 4-Differences in Between Weight, Fat Ratio and Some Blood Parameters Measurement Value Averages of Participants Before and After Tae-bo Exercises

Measurements (cm)	N	Preliminary Test	Last Test	Differences Between Averages	t	p
Weight	32	67,37±3,50	64,91±3,31	2,84	5,57	0,000**
Fat Ratio %	32	31,71±1,98	26,34±2,52	5,37	9,16	0,000**
Triglyceride (mg/dl)	32	104,93±6,36	88,25±3,16	16,68	11,54	0,000**
HDL (mg/dl)	32	47,06±3,88	53,28±2,77	-6,21	-7,81	0,000**
LDL(mg/dl)	32	98,46±2,60	82,68±2,97	15,78	29,01	0,000**
Total Cholesterol(mg/dl)	32	164,46±6,91	142,18±2,46	22,28	8,52	0,000**

p<0,01**, p<0,05*

According to Table 4, 8weeks aerobic tae-bo exercises changed cholesterol, triglyceride, HDL and LDL cholesterol values of women in the investigation group in a meaningful way ($p<0,01$). While there was a decrease in their triglyceride, cholesterol and LDL cholesterol levels; it was observed that there was a meaningful increase in HDL cholesterol level statistically ($p<0,01$).

4. Discussion

Our investigation is made for the purpose of determining the effect of eight weeks Tae-bo exercise program, implemented on sedentary women, on some physical and physiological parameters and it was determined in the direction of our investigation results that both blood lipid (triglyceride, cholesterol, HDL and LDL) levels and circumference measurement (Shoulder, Breast, Waist, Arm, Hip and Leg Circumference) levels of sedentary women, who made eight weeks tae-bo exercises regularly, were affected in a positive way.

In the study of Erbaş (2007), which was made on 54 middle-aged sedentary women, he investigated the effect of 6 months regular aerobic exercise program and he implemented totally 3 tests composed of preliminary test before the workout, intermediary test after 3 months and last test after 6 months. After the exercise protocol, VA and VYY values of test subjects were determined to decrease at a meaningful level ($p<0,05$).

Both as a result of this investigation and as a result of our investigation; positive decreases were observed in body weight, body fat ratio, circumference measurements and blood lipid levels of participants.

In the study of Mathunjwa, Semple, & du Preez (2013) implemented on 60 over weighted university undergraduate, he investigated the effect of 10 weeks tae-bo exercise program on obesity and cardio metabolic (CMD) risk factors. He observes positive developments in body weights, waist and hip circumferences, glucose, triglycerides, total cholesterol, LDL-C, HDL-C, resting heart rate and resting systolic and diastolic blood pressure levels of participants statistically and he determined that 10 weeks-30 sessions Tae-bo exercise program resulted with positive decreases in risk factors related to cardio metabolic diseases of over weighted / obese university undergraduates($p<0,05$). It is understood from our findings that the results of the aforementioned investigation were in parallel with our study.

In the study of Huttunen et al. (1979) which was made for investigating the effect of medium level physical exercise on serum lipoproteins, a decrease was determined in their LDL cholesterol levels($p<0,05$). In another investigation made by Ljubojevic, Jakovljevic and Poprzen (2014), 12 women with ages in between 25 and 35 who implemented Zumba exercise program for three days per week, in the course of totally 8 weeks, an important decrease was determined in their body weight values($p<0,05$). As it is seen, investigations whose subjects are effects of aerobic exercises on physical and physiological characteristics support the results of our study.

Tekin et al. (2018) studied with 40 obese university undergraduates for 3 months for the purpose of determining the effect of participating in tae-bo exercise program regularly, on physical, motoric and psychosocial parameters of female obese university undergraduates and concluded that the program affected physical, motoric and psychosocial factors of participants in a positive way($p<0,05$). In another study made by (Micallef, 2014), it was determined that there was an important loss of body weight in obese women who implemented Zumba program for eight weeks($p<0,05$).

When we consider the results of our study; it was determined that TRIG, HDL, LDL and Total Cholesterol values before tae-bo exercise program were $104,93\pm6,36$ mg/dl; $47,06\pm3,88$ mg/dl, $98,46\pm2,60$ mg/dl, $164,46\pm6,91$ mg/dl, respectively and the values after the exercise program were $88,25\pm3,16$ mg/dl, $53,28\pm2,77$ mg/dl, $82,68\pm2,97$ mg/dl, $142,18\pm2,46$ mg/dl, respectively and the said important decrease in their blood lipid values were meaningful statistically ($p<0,05$). Again, when we look at the results of our investigation, circumference measurements (shoulder

circumference, breast circumference, waist circumference, hip circumference and leg circumference) of sedentary women after tae-bo exercise program were determined to be decreased significantly in comparison with their position before tae-bo exercise program and the said decrease was determined to be meaningful statistically ($p < 0,05$).

5. Conclusion

Finally; eight weeks tae-bo exercise program implemented on sedentary women was determined to create important differences on some physical and physiological parameters. As is seen from the study, there was an important decrease in between preliminary test and last test results of the said investigation made on sedentary women. That shows that the implemented exercise program achieved the desired goal. It is very important to promote the said tae-bo exercise program, implemented with music and which is entertaining, to more people, raising the consciousness of people and guiding people. Thus, we think that the said exercise program which could be implemented with pleasure, would help to extinguish motionless life style and, besides, for the prevention of diseases such metabolic diseases, obesity etc. which could be faced in oncoming ages.

References

- Akın, G., Tekdemir, İ., Gültekin, T., Erol, E., & ve Bektaş, Y. (2013). *Anthropometry and Sports* (1st Edition). Ankara: Alter Journals.
- Arslan, E., Kelle, M., Baylan, Y., Diken, H., Atmaca, M., Tümer, C., Obay, B., & Şermet, A. (2001). Comparison of plasm lipid levels in sportsmen in between themselves and with controls. *Dicle Journal of Medical School*, 28(1), 23-34.
- Erbaş, Ü. (2007). *Physical and Physiological Effects of Calisthenic Exercises Towards Middle Age Obese Women*. Ankara, Gazi University, Master's Thesis.
- Greer, N. (2000). *Tae Bo: Fitness Craze or Effective speed. Aerobic and anaerobic exercises lead to a Workout?* Vanderbilt University, Tennessee, U.S.A. significant improvement in the motor speed of the players <http://www.vanderbilt.edu/AnS/psychology/health> and that speed plays an important role in the sports when [_psychology/TAEBO.htm](http://www.vanderbilt.edu/AnS/psychology/TAEBO.htm).
- Greer, N. (2016). *Tae-bo: Fitness Craze or Effective Workout?*. Tennessee: Vanderbilt University. (Erişim: 10.09.2019), www.vanderbilt.edu/AnS/psychology/health_psychology/TAEBO.htm

- Günay, M., Tamer, K., & Cicioğlu, İ. (2013). *Sports Physiology and Performance Measurement*. Gazi Bookstore, 978-075-6009-05-5 Ankara.
- Hižnayová, K. (2013). Exercise intensity during Zumba fitness and Tae-bo aerobics. *Journal of Human Sport and Exercise*, 8(2), 228-241.
- Huttunen, S., Manninen, J., Laine, K., Forsten, P., Pakonen T., & Törmälehto, H. (1979). Dispersion and Effect of Airborne Pollution on Vegetation. *Porin Kaupungin Tutimukseä*, 6, p. 32.
- Janssen, J., Fortier, A., Husson, R., & Ross, R. (2002). Effects of an energy–restrictive diet or with out exercise on abdominal fat, inter muscular fat, and metabolic risk factors in obese women. *Diabetes Care*, 25, 431-438.
- Ljubojević, A., Jakovljević, V., & Popržen, M. (2014). Effects of Zumba Fitness Program on Body Composition of Women. *Sportlogia*, 10(1), 29-33.
- Mathunjwa, M.L., Semple, S.J., & du Preez, C.A. (2013). ‘10-week aerobic exercise program reduces cardio metabolic disease risk in overweight/obese female African university students. *Ethn Dis.*, 23(2), 143-8.
- Micallef, M. (2014). The effectiveness of an 8-week Zumba program for weight reduction in a group of Maltese overweight and obese women. *Sport Sci Health*, 10, 211–217.
- Özer, Y., Bozda, Ö., & Pancar, Z. (2017). Acute effect of circuit aerobic and traditional aerobic training on hamstring flexibility in sedentary women. *European Journal of Physical Education and Sport Science*, 3(12), 268-275.
- Perez, B., & Greenwood-Robinson, M. (2009). *Zumba*. USA: Hachete Book Group.
- Son, M. (2017). *Investigation of the Relation between Anthropometric, Isokinetic Muscle Forces and Balance Parameters* (Master’s Thesis). Kocaeli University Institute of Medical Sciences
- Tamer, K. (2000). *Measurement and Assessment of Physical-Physiological Performance in Sports*. Ankara: Bağrgan Publishing House
- Tekin, A., Tekin, G., Aykora, E., & Çalışır, M. (2018). Physical Motoric and Psychosocial Outcomes of Tae-Bo Exercise Program in Women Undergraduates. *Anemon Muş Alparslan University Social Sciences Journal*, 6(3), 431-441.
- Tortop, Y., Ön, B.O., & Ögün, E.S. (2010). Effect of 12 Weeks Step-Aerobic Exercises on Some Physical Convenience Parameters. *Selçuk University Scientific Journal of Physical Training and Sports*, 12(2), 91–97.
- Tran, Z.V., & Weltman, A. (1985). Differential effects of exercise on serum lipid and lipoprotein levels seen with changes in body weight: A Meta–Analysis. *Jama*, 254, 919–24.

- Yeşil, P., & Altıok, M. (2012). The importance of physical activity for the prevention and control of cardiovascular diseases. *Turkish Society of Cardiology Cardiovascular Nursery Journal*, 3, 39-48.
- Zorba, E. (2001). *Physical Fitness*. 2nd Edition (pp. 2-216). Ankara: Gazi Bookstore. 2-216.