Beqa Geta, Miftari Florian, Gjinovci Bahri, Elezi Abdulla, Elezi Gresa. Impact of physicial activity with programmed intensity in body composition. Journal of Education, Health and Sport. 2018;8(11):416-424. eISNN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.1630215
http://ojs.ukw.edu.pl/index.php/johs/article/view/6329

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 05.11.2018. Revised: 20.11.2018. Accepted: 28.11.2018.

IMPACT OF PHYSICIAL ACTIVITY WITH PROGRAMMED INTENSITY IN BODY COMPOSITION

Geta Beqa
University of Prishtina,
Faculty of physical education and sport,
Kosovo

Florian Miftari
University of Prishtina,
Faculty of physical education and sport,
Kosovo

Bahri Gjinovci
University of Prishtina,
Faculty of physical education and sport,
Kosovo

Abdulla Elezi
University of Prishtina,
Faculty of physical education and sport,
Kosovo

Gresa Elezi
University Clinical Center of Kosovo,
Kosovo

Key words: women; cyclical movements; fats.

Abstract
Physical activity is a very important regulator of body mass, a more natural way of consuming energy which, according to the lifestyle of today, has become very limited. Due to this fact, this research was intended to validate the influence of cyclically-programmed intensity physical activity on some body components. The sample for the purpose of this research included 25 women aged 20-30 who willingly admitted to be part of this research. These variables of body components have been applied: Body weight (WEIG), Body fat (BOFA), Muscle mass (MUMA), Body mass index (BMI) and Visceral fat level (VIFA).For the evaluation of body components, the bioelectric device Tanita BC-60 (Segmental Body Composition Monitor) was used. The women's group included in the research as an experimental group has undergone a 3-month training program with physical activity with programmed intensity of 50-70% of the heart rate. For the assessment of the difference between two dependent groups in arithmetical averages, the t-testing (Paired Sample T-Test) has been applied. Results obtained after statistical processing show that cyclic physical activity with programmed intensity (50-70%) three times a week for one hour had a positive effect on body fat tissue reduction for 17.79%, $p < 0.000$.
Key words: women, cyclical movements, fats.

Introduction
Modern way of life greatly abolishes physical activity as a fundamental stimulus to life (WHO, 2006). It is estimated that physical passivity in Europe is responsible for about 600 000 deaths per year. Two-thirds of adults in the European Union (over 15 years of age) do not reach the recommended level of physical activity (WHO - Regional Office for Europe, 2006 by Trost et al., 2002). The data obtained in this way is related to the socio-economic situation, which is directly related to participation in physical activities in leisure time. Low-status people have less free time and have less access to leisure facilities, or live in an environment that does not encourage physical activity and are therefore less involved in physical activity (Hajmer, 2010).According to the World Health Organization's report (WHO, 2002), inadequate physical activity is revealed as the only risk factor and represents the nation's biggest health problem. Hypocinesia (a reduced movement, reduced physical activity) is a factor that contributes to the development of many diseases and chronic disorders and also leads to an increase in risk factors for cardiovascular and other chronic diseases such as diabetes, obesity, hypertension, bone diseases and others alike. (Warburton et al., 2001). Lack of physical activity reflects the time that the person of today lives and works, and it is known that movement is one of the most important health factors (Nakić & Rakić, 2003). If physical activity is insufficient, it is one of the nation's biggest health problems and has proven to be a contributing factor to the development of chronic diseases and disorders (Blair et al., 2004). In addition to the conditions of modern life, physical passivity is also associated with insecure human life and unemployment in many Balkan states, characterized by economic instability, and the philosophy of thought is present "with as little effort as possible- the pleasure is maximum ".(Nešić, 2013Lack of daily movements has negative consequences on individual health, where besides increasing the body weight and volume of physical inactivity leads to a decline in a number of motor skills, including some of them as indispensable for day-to-day functioning as in professional life as well as in the private one (Racette et al., 2008).Lack of daily movements is manifested with consequences in human body

systems, both in the musculoskeletal system (motor skills), cardiovascular system and respiratory system (aerobic endurance) followed by increased body weight directly related to increased body fat (r = 0.73) and visceral fat (r = 0.68) in the youth population (Mladineo Brničević et al., 2011).Women ages 20 to 30 are at an age when they have the most favorable ratio of body components, especially fatty and joyous. However, fatty mass values reach the upper limit (10-25% for males and 18-30% for females) (Mašina et al., 2014). Insufficient physical activity is associated with increased fat content and reduced muscular endurance (Mayer in al., 2012). Regular physical activity affects the reduction of fat content in muscle mass regardless of age or gender, and thus improves the quality of life. From this point of view, the purpose of this paper is to validate the influence of the cyclic type activity of programmed intensity in some bodily constituents.

Methods

The population from which sample is taken for this research is defined as the population of women aged 20 to 30 years. The test sample consists of 25 women who for the first time have expressed the desire to practice at the fitness center "Gettfit Center" in Pristina.
Women registered for the first time at the fitness center "Gettfit Center" in Pristina have expressed the desire to be part of the experiment in this research. Before undergoing treatment with cardio-respiratory exercises, the tested women have received the consent of the doctor that they are in good health. The body weight (WEIG), Body fat (BOFA), Muscle mass (MUMA), Body mass index (BMI) and Visceral fat level (VIFA) were used for the purposes of this research to evaluate some body composition parameters. For the evaluation of body components, the bioelectric device Tanita BC-60 (Segmental Body Composition Monitor) was used. Bioelectrical Impedance Analysis is a technique used for estimating body composition. The electrical signal passes quickly through the water that is present in hydrated muscle tissue but meets resistance when it hits fat tissue. This resistance, known as impedance, is measured and input into scientifically validated Tanita equations to calculate body composition measurements.The women's group included in the experimental experiment group has undergone a 3-month training program with programmed intensity of 50-70% of heart rate (Table 1). The heart rate intensity is calculated: 220 - year old; HR (Heart rate) = (Maximum HR - HR frequency of heart in peace) x 70% + HR (frequency of heart in peace) for recreation (Macura, 2008). For the realization of cyclically programmed intensity physical activity, the Insportline in Condi T40 was used as a quality jig for jogging. Advantages of the running trolley The Insportline in the Condi T40 is heart rate measurement with the help of a chest strap.For processing of the data, basic statistical parameters were applied, minimum score (Min) maximum score (Max) arithmetical mean (Mean) standard deviation (Std.Dev), measure of asymmetry distribution (Skewness) degree of homogeneity of distribution (Kurtosis). For the assessment of the difference between two dependent groups in arithmetical averages has been applied t-testing (Paired Sample T-Test).

Table 1. Cardio-respirator fitness program

Cardio-respirator fitness program						
Running						
	The first day		Other day		Third day	
Sunday	Minutes	Intensity	Minutes	Intensity	Minutes	Intensity
1	40 (4x10) 3p	50	40 (4x10) 3p	50	40 (4x10) 3p	50
2	40 (4x10) 3p	55	40 (4x10) 3p	55	40 (4x10) 3p	55
3	50 (5x10) 3p	60	50 (5x10) 3p	60	50 (5x10) 3p	60
4	60 (6x10) 3p	60	60 (6x10) 3p	60	60 (6x10) 3p	60
5	60 (3x20) 3p	65	60 (3x20) 3p	65	60 (3x20) 3p	65
6	60 (3x20) 3p	65	60 (3x20) 3p	65	60 (3x20) 3p	65
7	60 (3x20) 3p	65	60 (3x20) 3p	65	60 (3x20) 3p	65
8	60 (3x20) 3p	70	60 (3x20) 3p	70	60 (3x20) 3p	70
9	60 (3x20) 3p	70	60 (3x20) 3p	70	60 (3x20) 3p	70
10	60 (3x20) 3p	70	60 (3x20) 3p	70	60 (3x20) 3p	70
11	60 (2x30) 3p	70	60 (2x30) 3p	70	60 (2x30) 3p	70
12	60 (2x30) 3p	70	60 (2x30) 3p	70	60 (2x30) 3p	70

Results

Table 2 shows body fat variables, body weight (WEIG), body fat (BOFA), muscle mass (MUMA), body mass index (BMI) and visceral fat level (VIFA). In the variables of bodily constituents, the baseline statistical parameters of the 25 tested before the application of cyclic type activity of programmed intensity have been calculated. Looking at the results presented in the table given in the initial state we can conclude that the values of the central statistical parameters and the distribution of the body composition variables do not show significant asymmetry. The body weight body variables (WEIG) with the asymmetry test Skewness = -0.022, Body fat (BOFA) with asymmetry test Skewness = -0.022, and body mass index (BMI) with asymmetry test skewness = -0.022, are with negative sign (hypocritic) , which means that arithmetic averages point to lower values and that most variables are higher (above arithmetic average).

Muscle mass body variables (MUMA) with the asymmetry test Skewness = 0.022 and Visceral fat level (VIFA) with the asymmetry test Skewness = 0.022 are with the positive sign (epicuric), which means that arithmetic averages lead to higher values which means that most variables are lower (below arithmetic averages). The homogeneity of the distribution is estimated on the basis of the kurtosis coefficient. Most of the kurtosis coefficients: Bodyweight Kurtosis = -0.080, Body Fat Kurtosis = -0.018, Body Mass Index Kurtosis = -0.920 and Visceral Fat Level Kurtosis = -0.332 are with negative sign (platykuric), this means that there is more dispersion or variability. Variable Muscle Mass has a positive coefficient of kurtosis 0.344 which means that there is normal distribution (Mesocurtic).

Table 2. Basic statistic indicators of the body composition in the initial state

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
WEIG	25	50.60	76.80	64.5520	6.64048	-.022	-.080
BOFA	25	17.20	34.20	28.2000	4.71496	-.846	-.018
MUMA	25	38.70	52.10	43.8640	3.22450	.773	.344
BMI	25	21.40	28.10	25.0560	2.09087	-.061	-.920
VIFA	25	1.00	4.00	2.0000	1.11803	.972	-.332

Legend: Body weight (WEIG), Body fat (BOFA), Muscle mass (MUMA), Body mass index (BMI) and Visceral fat level (VIFA).

Table 3 presents the variables of body components where the baseline statistical parameters of 25 were tested after application of cyclically programmed intensity physical activity. Looking at the results presented in the table given in the final state we can conclude that the values of the central statistical parameters and the distribution of the body composition variables do not show significant asymmetry (except variables, Visceral fat level). Body mass index variables (WEIG) with asymmetric test Skewness = 0.467, Muscle mass (MUMA) with asymmetric test Skewness = 0.354, Body mass index (BMI) with asymmetric test Skewness = 0.191, and Visceral fat level (VIFA) with the Asymmetry Skewness test = 2.491 are with the epicuric sign, which means that arithmetic averages point to lower values and that most of the variables values are higher (above the arithmetic average).The body fat (BOFA), with the asymmetry test Skewness = -0.242 is with the negative sign (hypocritic), which means that the arithmetic averages aligns to the lower values which means that most of the variables values are higher (higher than arithmetic average). The homogeneity of the distribution is estimated on the basis of the kurtosis coefficient. Most of the kurtosis coefficients: Body weight Kurtosis = -0.368, Body Fat Kurtosis = -0.671 and Body Mass Index Kurtosis = -0.615 are with negative sign (platykuric), this means there is more dispersion or variation. Variable Muscle Mass has a positive coefficient of kurtosis 0.344 which means that there is normal distribution (Mesocurtic). Visceral fat level has a positive coefficient of kurtosis 4.563 which means that there is a Leptocurtic distribution, which means that there is extreme collection of values to the lower ones.

Table 3. Basic statistic indicators of body composition in the final state

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
WEIG	25	48.00	72.20	57.3960	6.21795	.467	-.368
BOFA	25	14.70	28.40	23.1840	3.66466	-.242	-.671
MUMA	25	36.90	49.70	41.6840	3.04818	.354	.580
BMI	25	19.40	26.10	22.4560	1.86639	.191	-.615
VIFA	25	1.00	2.00	1.1200	.33166	2.491	4.563

Legend: Body weight (WEIG), Body fat (BOFA), Muscle mass (MUMA), Body mass index (BMI) and Visceral fat level (VIFA).

Table 4 shows the differences between initial status (prior to application of programmed intensity cyclic type activity) and final status (after application of programmed intensity cyclic type activity) to the female group included in research. The difference between Body weight (WEIG) values before and after the application of cyclically programmed intensity physical activity is Mean Diff = 7.156 is statistically significant p <0.000. The difference between body fat values (BOFA) before and after the application of cyclically programmed intensity physical activity is Mean Diff = 5.016 is statistically significant p <0.000. The difference between Muscle Mass (MUMA) values before and after application of cyclically programmed intensity physical activity is Mean Diff = 2.180 is statistically significant p <0.010. The difference between body mass index (BMI) values before and after application of cyclically programmed intensity physical activity is Mean Diff = 2.600 is statistically significant p <0.010. The difference between Visceral fat levels (VIFA) values before and after the application of cyclically programmed intensity physical activity is Mean Diff = 0.880 is statistically significant p <0.010.

Table 4. The difference between body component variables initially and after treatment with cyclically physical activity programmed intensity

	Paired Samples Test					
	Mean Diff.	Std. Deviation	Std. Error Mean	t	Df	Sig. (2-tailed)
WEIG-WEIG	7.15600	8.17038	1.63408	4.379	24	.000
BOFA-BOFA	5.01600	6.03709	1.20742	4.154	24	.000
MUMA - MUMA	2.18000	3.87255	0.77451	2.815	24	.010
BMI-BMI	2.60000	1.68325	0.33665	7.723	24	.000
VIFA-VIFA	0.88000	1.09240	0.21848	4.028	24	.000

Legend: Body weight (WEIG), Body fat (BOFA), Muscle mass (MUMA), Body mass index (BMI) and Visceral fat level (VIFA).

Discussion

Unlike transversal research, longitudinal research is subject to many factors. The important factor in conducting longitudinal research in kinesiology is the selection of the sample. In these surveys, in most cases the selection of the sample is conditioned by the desire of the tested to participate in the research. Such a conditioning by the testers to participate in this research has made the group of 25 tested to be approximately homogeneous, which is proved by the asymmetry test (Skewness) and distribution (Kurtosis). Body mass after application of cyclic physical activity with programmed intensity has decreased by 7,156kg. or 11.08% of body weight. The body weight is related to the Body Mass Index (BMI). From the bodily constituents, the Body Mass Index is the main indicator of the obesity.At the beginning of the research the Body Mass Index was BMI = 25,056 kg / m2. We have no research in Kosovo that shows the body weight master in order to conclude that our sample included in the research is above the average value or below the average body mass index value. According to current research, excess

body weight means body weight over normal body weight index of 25 to 29 kg / m2 (Mišigoj-Duraković et al., 1995), which is similar to the weight average index value body mass index (BMI) at the beginning of our research. After the application of cyclic physical activity with programmed quarterly intensity three times a week for one hour, the body weight index (BMI) value has decreased to 22,456.Research findings show the application of cyclic intensity activity (50-70%) programmed quarterly three times a week by one hour had a positive impact on the body mass index in females (p <0, 000). We can conclude that physical activity is an important regulator of body mass, a more natural way of consuming energy which, according to today's lifestyle, has become very limited. The results of the research on the effect of physical activity on body mass are different. The common opinion is that physical activity affects the reduction of body mass. Malina & Katzmarzyk (1999) consider that the BMI index should be maintained within the range of 21 to 23kg / m2 in order to maintain the health index. Results after the application of cyclic physical activity with programmed intensity but having an effect on reducing the body mass index, also maintains energy balance in the body, thus preventing the emergence of excess kilograms (Hill and Wyatt 2005).Physical activity affects the reduction of subcutaneous fatty tissue and accelerates metabolism, and also has a significant effect on the hormonal system, which again prevents the emergence of excess kilograms (Hackney, 2006). Often, different authors ask questions about which activity is resolved to maintain the optimal state of the organism. From physical activities that have a positive impact on the body, respectively, can greatly affect the improvement of the functioning of the internal organs and reduce subcutaneous tissue fat is running as a cyclic monostructural movement. This movement is precisely physical activity as an important factor that hinders the emergence of excess weight (Hunter, 2000). Although the results show that the body mass index is an important indicator of body mass and as a indicator of body fat deposits in the body, some researchers point out that they should be replaced by other indicators (Kragelund & Omland, 2005). Until the wrong classification in BMI based on obesity may come to elderly people who due to the aging process are responsible for loss of muscle mass and growth of body fat in the body and body mass index (BMI) can underestimate fat mass stores.The problem may also exist in people with muscular development who may have high BMI even though they are not overweight (Flegal et al., 2009; Kragelund & Omland, 2005). And despite these deficiencies in the Body Mass Index (IBM), many researches have confirmed that BMI is a good indicator of body fat masses in the body (Hu, 2008; WHO, 2002; Gallagher et al. 2008). The results of the research show that in addition to the reduction of the body mass index by physical cyclic activity with programmed intensity, the body fat mass from the value of 28.2% at the beginning of the measurement was reduced to 23.184% at the end of the measurement with a difference of 5.016% or 17.79% was the effect of cyclic intensity activity (50-70%) programmed quarterly three times a week by one hour. The results of this are in line with other authors' researches where the effect of physical activity on the amount of body fat on the body is physically active compared to persons physically inactive especially in females (Krassas et al., 2001). Unlike other physical activities, running 50-70% intensity is aerobic activity that reduces body fat (Andrijaševi, 2010). As mentioned above, we can point out that aerobic exercise is the most important exercise in fat burning. American College of Sports Medicine "defines aerobic exercise as any form of physical activity that is performed by activating large muscle groups, relatively long (over 20 minutes), which exercise essentially is predominantly cyclic and intense the exercise should be 60-80%, (70% master) of

the maximum heart rate rate calculated for each individual " (http://www.dijeta.co/najbolje-vjezbe-za-mrsavjenje/).

Conclusion

Determining body components should be one of the common methods not only in terms of medical disciplines, but also in sporting, recreational and therapeutic sciences. Mainly, the purpose of these contemporary methods should be more often focused on determining the amount of fatty component. Determining the amount of fatty component is of particular importance in verifying the percentage of fatty mass needed in the organism as body temperature regulator, wrapping and body protector and as energy reserve for the work of the organism and the percentage of excess fatty mass in the organism that is a major risk to many health problems and illnesses. Research has shown that the application of cyclic physical activity at programmed intensity (50-70%) quarterly three times a week by one hour has reduced the body mass by 11.08% $p < 0.000$. In the reduction of body mass most influenced the decrease of the percentage of fatty mass from 28.2% to 23.18%, indicating that the fatty mass was reduced by 17.8%. This research shows that cyclic physical activity at programmed intensity (50-70%) three times a week for one hour had a positive effect on body weight (WEIG), body fat (BOFA), muscle mass (MUMA), Body Mass Index (BMI) and Visceral Fat Level (VIFA).

References

Andrijaševi, M. (2010). Kineziološka rekreacija. Zagreb: Kineziološki fakultet Sveuilišta u Zagrebu.

Blair, S.,N., LaMonte, M.J., &Nichaman, M.,Z. (2004). The evolution of physical activity recommendations: How muchis enough? American Journal of Clinical Nutrition, 79 (5), 913-920.

Flegal, K.M., Shepherd, J.A., Looker, A.C., Graubard, B.I., Borrud, L.G., Ogden, C,L,, et al. (2009). Comparisons of percentage body fat, body mass index, waist circumference, and waiststature ratio in adults. Am J Clin Nutr.;89(2):500-8.

Gallagher D, Visser M, Sepulveda D, Pierson RN, Harris T, Heymsfield SB. (1996). How useful is body mass index for comparison of body fatness across age, sex, and ethnic groups? Am J Epidemiol, 143:228-39.

Hackney, A. C. (2006). Exercise as a stressor to a human neuroendocrine system. Medicina (Kaunas), 42(10). 788-97.

Hajmer, S. (2010). Svjetska zdravstvena organizacija. Tjelesna aktivnost i zdravlje u Europi – dokazi za akciju (preveo Stjepan Heimer). Zagreb: Kineziološki fakultet, Sveučilišta u Zagrebu.

Hill, J.O., i Wyatt, H.R., (2005). Role of physical activity in preventing and treatingobesity. Appl Physiol, 99, 765 – 770.

Hu, F., (2008). Editor. Obesity Epidemiology. New York: Oxford University Press.

Hunter, G., Bamman, M. M., Hester. (2000). Obesity – Prone Children Can Benefit from High – Intensity Exercise. Strength Cond. J., 22,1, 51 – 54.

Kragelund, C. & Omland, T. (2005). A farewell to body mass index? Lancet. 366, 1589-91

Krassas, G.E., Tzotrzas, T.H., Tsametis, C., Konstantinidis, T. (2001). Prevalence and trends in overweight and obesity. among children and adolescents in Thessaloniki. Greece. J Pediatr Endocrinol Metab, 14, 5, 1327-33.
Macura, M. (2008). Osnovi rekreacijske medicine. Beograd: Fakultet sporta i fizičkog vaspitanja.
Malina, R. M. & Katzmarzyk, P. T. (1999). Validity of the body mass index as an indicator of the risk and presence of overweight in adolescents. Am. J. Nutr; 70,131 – 136.
Mayer, J.M., Nuzzo, J., Chen, R., Quillen, W.S., Verna, J.L., Miro, R., Dagenais, S. (2012).Impact of obesity on back and core muscular endurance in firefighters. Journal of Obesity;729283:1-7.
Mikalački, M. (2005). Sportska rekreacija. Novi sad: Univerzitet u Novom Sadu.
Mladineo Brničević, M., Duplančić, D., Marinović, M. (2011). Primjena vage OMRON BF-500 u dijagnostici tjelesne konstitucije studentica. U: Zbornik radova 20.ljetne škole kineziologa RH (p.p. 139-143). Rovinj, Hrvatska: Zagreb, Hrvatski kineziološki savez.
Mašina T., Zečić M., Pavlović D. (2014). Spolne razlike u nekim antropometrijskim i motoričkim osobinama među studentima medicinskog fakulteta. 7TH International stiencific conference on kinesiology, Fundamental and Applied Kinesiology-Steps Forward, Croatia: 22 – 25,
Mišigoj – Duraković, M., i sur. (1995). Morfološka antropometrija u športu. Zagreb: Fakultet za fizičku kulturu.
Nalić, D., i Rakić, M. (2003). Zdravi stilovi života. Značaj kretanja za život i zdravlje. Soprt, fizička aktivnost i zdravlje mladih (132-134). Novi Sad: Univerzitet u Novom Sadu, Novosadski maraton.
Nešić, M. (2013). Vrednosni aspekti univerzitetskog sporta. Teme, 2, 1011-1024Racette S.B.,
Deusinger S.S., Strube M.J., Highsein G.B., Deusinger R.H. (2008). Changes in weight and health behaviours from freshman through senior year of college. Journal of Nutrition Education and Behavior, 40:39-40.
Warburton, D., E., Gledhill, N., & Quinney, A. (2001). Musculoskeletal fitness and health. Canadian Journal AppliedPhysiology, 26, 217-237.
WHO (World Health Organization). (2002). The World health report 2002 - Reducing risks, promoting healthy life. Geneva: World Health Organization. http://www.who.int/whr/2002/en, pristupljeno 26.05.2015.
Trost, S.G., Owen, N., Bauman, A.E., Sallis J.F., Brown, W. (2002). Correlates of adults' participation in physical activity: review and update. Med Sci Sports Exerc, 34, 12, 1996–2001.
World Health Organisation (2002). The world health report 2002: reducing risks, promoting healthy life. Geneva: World Health Organization.
WHO (2006). Physical activity and health in Europe: evidence for action. / Edited by: Nick Cavill, SonjaKahlmeier and Francesca Racioppi. Copenhagen Denmark.