EFFECT OF EXPERIMENTAL TAE BO TRAINING MODEL FOR COORDINATION DEVELOPMENT OF YOUNG WOMEN

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Abstract

The study included 60 subjects, 18 to 25 years of age divided into a group of 30 young women involved in an experimental tae bo training model (experimental group) and a group of 30 young women who are not involved in any program of regular physical exercise (control group). In order to test the level of general coordination, seven tests were used: the figure "8" with bending (MOSS), jumping over the rope (MPHV), 20 steps forward with the pulling of the stick through the legs (M20IPP), ball circling around the body and through the legs (MKTN), hand slalom with two balls (MSLAL), 3 forward rolls (M3KOL) and complex locomotor test (MSLT). Data were processed by analysis of variance, t-test and analysis of covariance. The results showed that there is statistically significant effect of experimental tae bo training model on the development of general coordination among younger women.

Key words: *Tae Bo training, coordination, younger women*

Introduction

Tae Bo is a model of aerobic exercise which was founded by Billy Blanks, which combines the best of the many existing variants of exercise. It is a combination of self awareness and control of military skills, the center and power of boxing, charm and rhythm of dance (Blanks, 1989). In aerobics, the tempo of music determines the intensity of exercise, faster tempo intensive work (high impact), and the slow tempo imposes lower intensity exercise (low impact) (according to Despić, 1997, 198). The word itself was formed from the initial syllables of two sports - taekwando and boxing. Blanks later explained the name of tae bo (Total Awareness Excellence Body Obedience), and in 1989. it began with a combination of music and the elements of taekwando and boxing, to achieve more intensive training. Tae Bo includes kicks from karate, but it is not intended for fighting or self-defense. There are no takedowns, wrestling or fighting on the ground. It has been created to improve health, promote fitness and endurance through movement. Tae Bo includes aerobic exercises, it increases the capacity of the heart and lungs, flexibility, it burns calories, it reduces stress, and it strengthens the muscles of the body. These high-intensity exercises are among the cardio vascular exercises, they affect the strength, muscular endurance, flexibility, and they develop a general body coordination. Coordination is an ability of performing simple and complex movements, but also rapid learning of new movement and quick change of one movement with another (Drabik, 1996). This type of movements require the cooperation of many parts of the body without excessive mental strain with less errors and effort. For people who have developed this capability at a high level, there is the possibility of correcting errors in the execution of the movements. Coordination is caracterized by the use of muscles or muscle groups that are most appropriate to requested movement. On that occasion, the synchronization higher regulatory centers and peripheral parts of the locomotor apparatus is performed (Metikoš et al., 2003). Coordination is associated with the technique of the sport or sport disciplines. Coordinated movements are faster, more economical and more efficient (Bompa, 2005). Coordination is influenced by (by Drabik, 1996) sportsmen's intelligence, acquired motor skills and level of development of other motor skills. Most researchers (Bompa, 1999; Drabik, 1996; Hirtz & Starosta, 2002) consider that the primary coordination skills should be developed by the beginning of puberty, exactly from sixth to twelveth year, which is called "sensitive phase". During puberty, there is stagnation, because this period is characterized by rapid growth and development of the organism, but after leaving it condition is improving. Researches show (Stojiljković, 2003, Stanković, 2004) that coordination has multiple dimensions: coordination of the arms, legs and body, dexterity, agility, timeliness, tempo, rhythm coordination, reorganization of stereotyped movements, the speed change of moving direction, the general static and dynamic coordination, fine and gross body coordination, coordination of strong movement performance, motoric education and motoric intelligence. The aim of this study was to determine the effect of experimental tae bo training model on the development of general coordination among younger women.

Methods

The study involved 60 female subjects, 18 to 25 years of age. The sample was divided into two sub-samples: 1. A group of 30 young women involved in an experimental tae bo training model (experimental group), 2. A group of 30 young women who are not involved in any program of regular physical exercises (control group).

In order to check the level of general coordination, the seven tests have been used: the figure "8" with bending (MOSS), jumping over the rope (MPHV), 20 steps forward with the pulling of the stick through the legs (M20IPP), ball circling around the body and through the legs (MKTN), hand slalom with two balls (MSLAL), 3 forward rolls (M3KOL) and complex locomotor test (MSLT). Data were processed by analysis of variance, t-test and analysis of covariance.

Experimental program

The structure of the three months training period (36 hours, three times a week) had a conception of tae bo aerobics with fast tempo music of 135 to 155 beats per minute. Trainings are conducted in the aerobics studio NIA in terms of optimum temperature of 18 to 22 degrees. This model of training is intended for all levels of aerobic endurance developing. It includes the performance of manual and leg elements of boxing, karate and taekwondo technique, combined in a simple choreographies which provides muscular tone of the entire body. This model of exercise improves body coordination, raises aerobic endurance and functional capacity while reduces weight. Temporal structure of the training consisted of three parts:

1. *Introduction* (heating) lasts for five minutes. First of all it need to raise the whole body temperature and to increase blood flow in the body. Tempo of music in this part is from 100 to 120 tacts per minute. Following steps are applying: *Walk, Jogging, Step Touch, Double Step Touch, Leg Curl, Double Leg Curl, Knee Up, Up Double Knee*. The purpose of the introductory phase is to prepare the body for the next strain with simple choreography, composed of the basic steps of walking and jogging in place and motion.

2. *The main part* - contains two separate parts:

Aerobic part - duration of this part is 30 minutes and it consists of movement, blocks and sequences of movements that are directed to the development of cardiovascular and respiratory systems. The steps are clearly defined and used in popular international terms typical model for the tae bo training: *Jab, Hook, Cross, Upper Cut, Kick (front, side, back)*. In the aerobic part there are 24 repetitions by one leg, than another one, also by hands. This number of repeats is predicted for the first mesocycle of 12 training and for the next mesocycle the number of increases for four repetitions. For the last mesocycle another four repetitions are planned. The break is one minute.

Body shaping exercise - this part of the training focuses on exercises for shaping and strengthening the body. In every training the series of exercises is applying for different muscle groups. Music tempo is from 100 to 120 tacts per minute. During the implementation of this part of the training, cardio-respiratory load of the system is low. Strengthening exercises are used for:

- hand and shoulder muscles
- abdominal muscles
- back muscles
- gluteal muscles
- leg muscles

Length of this part of the training is 20 minutes. First 10 minutes is for treated muscle group, performing three to five series with the number of repeats from 16 to 20 (the first mesocycle 16, the second 18 and third 20). Another 10 minutes is for strengthening exercises for abdominal muscles.

3. *The final part* - the duration of this part is five minutes with content devoted to stretching exercises and relaxation in order to calm the body. Tempo of the music is from 40 to 60 tacts per minute. Static stretching exercise (stretching) are implemented. Each drill is performed in the sustain period of 20 seconds. The choice of exercises depends on the muscle groups that engage in exercise for body shaping.

Results

Analysis of variance between experimental and control groups at the initial measurement

Table 1. Multivariate analysis of variance between experimental and control groups in the general coordination of the initial measurement

Wilks' Lambda	F	P
0.753	2.440	0.031

Table 2. Univariate analysis of variance between experimental and control groups in the general coordination of the initial measurement

Variable	Mean (E)	Mean (K)	F	P
MOSS	25.16	25.30	0.03	0.86
MPHV	5.76	4.53	3.39	0.07
M20IPP	17.16	17.32	0.03	0.85
MKTN	16.92	17.45	0.47	0.50
MSLAL	12.58	12.84	0.20	0.66
M3KOL	4.11	4.50	3.84	0.05
MSLT	18.20	18.45	0.08	0.78

Analysis of the difference between the initial and final measurements of the experimental group studied by T-test

Table 3. Significant difference between the arithmetic means of measured group

Measure.	Mean(i)	Mean(f)	T-value	p
MOSS	25.16	23.57	2.18	0.03
MPHV	5.77	7.57	-2.79	0.01
M20IPP	17.17	14.76	3.42	0.00
MKTN	16.93	15.04	2.94	0.01
MSLAL	12.58	11.43	2.42	0.02
M3KOL	4.11	3.56	3.33	0.00
MSLT	18.21	15.72	2.94	0.01

Analysis of covariance between the experimental and the control group at the final measurement

Table 4. Multivariate analysis of covariance between the experimental and control groups in the general coordination of the final measurement

Wilks' Lambda	F	Effect df	Error df	P
0.4	9.79	7	45	0.00

Table 5. Univariate analysis of covariance between the experimental and control groups in the general coordination of the final measurement

Measure.	Adj. Mean (E)	Adj. Mean (K)	F	P
MOSS	24.58	25.11	8.25	0.00
MPHV	6.21	6.15	6.03	0.00
M20IPP	16.68	17.09	9.49	0.00
MKTN	16.32	16.61	4.45	0.00
MSLAL	12.37	12.38	7.60	0.00
M3KOL	3.94	3.98	6.50	0.00
MSLT	17.40	18.15	8.86	0.00

In Table 1 there are results of significance difference of arithmetic means of all general coordination tests between the experimental and control groups initial measurement. It was found statistically significant differences, as Wilk's lambda is .399 and Rao F-approximation of 2.44 gives significant differences in level of P = .031. Based on the F coefficients and their significance (P) it can be concluded that there are no statistically significant difference in any of the general coordination tests between the experimental and control groups, except for test 3 forward rolls (M3KOL .045). Table 3 contains the results of T-test of motor skills between the initial and final measurements of the experimental group. After analyzing the results it can be concluded that there are a statistically significant differences in the level of all coordination tests: the figure “8” with bending (MOSS .033), jumping over the rope (MPHV .007), 20 steps forward with the pulling of the stick through the legs (M20IPP .001), ball circling around the body and through the legs (MKTN .005), hand slalom with two balls (MSLAL .019), 3 forward rolls (M3KOL .002) and complex locomotor test (MSLT .005). The results of multivariate analysis of covariance (Table 4) between the experimental and control groups at the final measurement point to the presence of statistically significant difference in favor of the experimental group in the level of general coordination at the level of P = .000. The difference was influenced by the experimental tae bo training model, which had a positive influence on the general coordination transformation processes at the experimental group. On the Table 5 there are univariate values of analysis of covariance between the experimental and control groups at the final measurement with the neutralization of differences in the field of general coordination in the initial measurement. There are statistically significant differences between groups (P< .01) in the favor of the experimental group at the level of all general coordination tests: the figure “8” with bending (MOSS .000), jumping over the rope (MPHV .000), 20 steps forward with the pulling of the stick through the legs (M20IPP .000), ball circling around the body and through the legs (MKTN .000), hand slalom with two balls (MSLAL .000), 3 forward rolls (M3KOL .000) and complex locomotor test (MSLT .000).

Discussion and conclusion

The modern way of life, and inadequate treatment of the natural need for movement, lead to disturbances in the functioning of certain organs and organic systems. Researches suggest (Cooper, 1976; Strømme et al., 1996) that by dealing with regular physical exercise, it may affect the reduction of negative consequences of modern living on the body. Physical activity in that regard participate in maintaining of the working capacity and improving subjective feelings of people. Preservation of functional capacity, cardiovascular (Radovanović et al., 2008), respiratory, motor and nervous systems can be influenced by the regular practice of physical exercise. In addition to aerobic exercises, it is recommended to practice exercise programs for the development of endurance, mobility and coordination. One of these programs is the recreational tae bo training model, that develops aerobic endurance, strength, mobility and coordination. In their research Boeva et al (2003) came to similar conclusions, indicating an increase in physical abilities of the respondents after the implementation of the experimental model of Tae Bo aerobics. They also observed a positive impact on health status and motivation in dealing with other forms of physical exercise. Of many benefits that Tae Bo workout can make it should mention the reduction in body mass, circular dimensionality and some subcutaneous fat (Petković, Veselinović & Stojanović, 2007). Tae Bo affects those who practice in terms of self-discipline, strengthening the entire body, toning muscles of individual body parts and a beneficial effect on cardiac work (Tae Bo Cardio - basic idea of creator of the Tae Bo exercise was beneficial impact on cardiovascular work). In addition to influencing on the body in the physical sense, it should be noted that this form of recreational exercise was designed to improve mental acuity, self-confidence, self-awareness, and getting to know the basics of different martial arts Tae Bo was formed, which can ultimately help on the occasion of self-defense. In the study of Daniel Landers (1997) from Arizona State University conclusions were derived in favor of positive impact on mental health in the form of relieving symptoms of depression and anxiety. This form of recreational exercise is becoming increasingly popular, especially among women, although not designed exclusively as an activity for women. But very few men interested in Tae Bo, which may be explained by recent appearance of this kind of exercise and the inability to measure so quickly with many other famous (male) sports. Those cited researches have shown that physical activity may contribute to successful body shaping and healthier lifestyle. Therefore, if you take one hour per day, three times a week, it is not a "loss" if you want to get a different dimension of a very high quality spent free time. It is very pleased to present the fact that there are more and more those who practice of different ages who become aware of the great problem of modern man - hypokinesis. In the constant struggle for survival and providing financial security to his family, a man forgets of hisself and his body which has a negative impact on quality of life. Therefore, this type of recreational exercise can be considered as an effective solution. Tae Bo workout essentially has a positive effect on the entire human body, regardless of the initial desire of everyone who practices.

Coordination is only one segment of the anthropological status, however, that was enough to show the efficiency in the case of proper execution of exercise. There is no doubt that positive transformative processes would be also found with other anthropological dimensions. This research has shown that general coordination among younger women can be improved by the planned and systematic working with Tae Bo training model. The results showed that there is statistically significant effect of experimental models of Ta bo exercise on the development of tests of coordination among younger women at the level of P = .000. Featured program of experimental Tae Bo training model can serve as a starting point for future researches in this field.

Literature

Blanks, B. (1998). *What is Tae Bo?* Available: http//www.billyblanks.com, 10.05.2007.

Boeva, B., Angelova, T., Ivanova, V., & Serafimova, M. (2003). Physical education and sport for ecology directed development of man. *Trakia Journal of science, 1*(1), 42-43.

Bompa, T.O. (1999). *Periodisation: Theory and methodology of training.* Champaign IL: Human Kinetics.

Bompa, T.O. (2005). *The entire training for young winners*. Zagreb: Nacional and University Library.

Cooper, K.H. (1976). Physical fitness levels vs. selected coronary risk factors. *JAMA*, 236, 166-169.

Despić, D. (1997). *Theory of music*. Belgrade: Institute for textbooks and teaching aids.

Drabik, J. (1996). *Children & sports training: How your future champions should exercise to be healthy, fit and happy.* Island Pond, VT: Stadion Publiching Company.

Hirtz, P., & Starosta, W. (2002). Sensitive and critical periods of motor coordination development and its relation to motor learning. Available: *Journal of Human Kinetics, 7*, http://www.humankinetics.com/searchresults.cfm, 23.05.2007.

Landers, M.D. (1997). The influence of exercise on mental health. *PCPFC Research Digest*, *2*(12).

Metikoš, D., Milanović, D., Prot, F., Jukić, I., & Marković, G. (2003). Theoretical and methodological foundation of coordination development. In D. Milanović & I. Jukić (eds.), *Conditional preparation of sportsmen 2003,* (pp. 264-270).

Petković, E., Veselinović, N., & Stojanović-Tošić, J. (2007). Differences in circular dimensionality and subcutaneous fatty tissue at female subjects included at three months Tae bo exercise program. *International scientific conference »Physical activity and health«* (pp. 81-86). Belgrade: Faculty of sport and physical education.

Radovanović, D., Jakovljević, V., Cvetković, T., Ignjatović, A., Veselinović, N., & Dondur, S. (2008). Effects of different exercise program on blood markers of oxidative stress in young women. *Fiziologia*, *18.3*(59), 16-19.

Stanković, V. (2004). *Fundamentals of applied kinesiology*. Leposavić: Faculty of physical education.

Stojiljković, S. (2003). *Fundamentals of basic anthropomotorics*. Niš: Student's cultural center.

Stromme, S., Frey, H., Harlem, O., Stoke, O., Vellar, O., Aaro, L., & Johnsen, J. (1996). *Physical activity and health.* Oslo: Norvegian Confederation of Sports Universitetsforlaget.

EFEKTI EKSPERIMENTALNOG TAE BO TRENAŽNOG MODELA NA RAZVOJ KOORDINACIJE MLADIH ŽENA

Sažetak

Istraživanje je uključilo 60 subjekata, 18 do 25 godina podijeljenih u dvije grupe: 30 mladih žena uključenih u eksperimentalni tae-bo trenažni model (eksperimentalna skupina) i grupu od 30 mladih žena koje nisu uključene ni u koji program regularnog tjelesnog vježbanja (kontrolna skupina). Radi testiranja razine opće koordinacije korišteno je sedam testova: figura "8" sa sagibanjem (MOSS), preskakanje konopca (MPHV), 20 stepova s provlačenjem štapa kroz noge (M20IPP), kruženje loptom oko tijela i kroz noge (MKTN), slalom s dvije lopte (MSLAL), 3 kotrljanja naprijed (M3KOL) i složeni lokomotorni test (MSLT). Podaci su obrađeni analizom varijance, t-testom i analizom kovarijance. Rezultati su pokazali da postoji statistički značajan efekt eksperimentalnog tae-bo trenažnog modela na razvoj opće koordinacije među mlađim ženama.

Ključne riječi: *Tae Bo trening, koordinacija, mlađe žene*

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