THE IMPROVEMENT OF MORPHOLOGICAL PARAMETERS BY THE INTRODUCTION OF MARTIAL ARTS TECHNIQUES IN PHYSICAL EDUCATION AND SPORTS LESSONS

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Abstract

Tae Bo is one of the most impressive and demanding training methods, which is also based on the principles promoted by the martial arts. From the point of view of the mental and physical demands required by this method of preparation, Tae Bo lessons are a real challenge for the students and it bring many beneficial effects in their development plan. In the present research, we started from the hypothesis that teaching martial arts techniques and combining them with other motor structures, in an aerobic program performed on music, will lead to the improvement of the morphological indices of the students from the experimental group. The experiment and control group were made up of 24 students from the Accounting and Management Informatics specialization. The research was carried out during a university semester, and at the end it was shown that the kicks and the punches performed on all trajectories, have had beneficial effects on the cardiovascular and respiratory systems, but at the same time they have contributed to the harmonious development of the body resulting in better values of the measured morphological indices.

Introductions

Billy Blanks invented Tae Bo based on the desire to make Taekwondo techniques to the beat of the music. These techniques have a complex character and develop skill, strength, speed and endurance. All these qualities manifest themselves on a high intensity. The main feature of these exercises is the alternation of submaximal efforts with those of maximum intensity. According to [4] (2013, p. 129), in a Tae bo lesson, about 500-800 calories are consumed, double compared to those lost in an classic aerobics lesson.

In the physical education lesson with the students, Tae Bo represents a system that brings multiple valences. The popularity of Tae Bo results from the attractiveness and accessibility of the techniques. In these programs, the use of music is required mainly in the form of

accompaniment, where all the exercises in the program are structured on even times, the count corresponding all the time to the musical phrase.

Music is of particular importance during the training sessions. The association of music with physical exercises leads to a better engagement of the students in effort and to its support for a longer period of time. Also, music distracts attention from fatigue, has a stimulating and motivational effect, causes physical exercise to be performed with the same intensity, and increases concentration during effort [1] (p.193-201 [3] (p.114-134), [2] (pp.23-26), [5] (pp.233-238).

The Tae Bo tehniques are mainly aimed at young people, forming some of the most attractive lessons of physical education. After learning Tae Bo techniques, they integrate into aerobic programs. The aerobic technical content known internationally and carried out in the training programs are: Low aerobic impact (130-155 Bpm rhythm), High aerobic imapct (140-160 Bpm rhythm), Hi - low (130-160 Bpm rhythm) and Cardio Training (140-170 Bpm Rhythm) [8] (p.183).

The aerobic effort is carried out in a balance between demand and oxygen consumption. Aerobic efforts are performed with low, medium or submaximal intensity.

Material and method

Hypotheses of the research: teaching martial arts techniques and combining them with other motor structures, in an aerobic program performed on music, will lead to the improvement of the morphological indices of the students from the experimental group.

The purpose of the research: in this article we have presented the results of more extensive studies, which lasted for a period of 3 years [6], [7]. The purpose of this research is to demonstrate if the programs developed by us for the discipline physical education and sports can influence the morphological indices of the students from the faculties with non-sports profile.

Subjects of research: the experiment group was made up of 24 students, in the second year of study, in the accounting and management informatics specialization and the control group was also made up of 24 students from the same year. The subjects are between 19 - 21 years old.

The research methods: method of study of specialized literature, method of analysis, survey method based on questionnaire, graphical method, tebel method, statistical and mathematical method.

Means used in research: the means proposed by us include: basic positions, specific steps and movements, walking and running variants, punching (direct, diagonal, circular and bottom up), elbow techniques

(circular, lateral and top to bottom), foot techniques (frontal, lateral, circular kick, backwards from the lateral guard position), knee techniques (direct, lateral and standing kick on a knees), all in simple connections and combined with movements in different directions and planes of the arms and legs, jumps, turns, etc.

Results

After performing the anthropometric measurements and calculating the proportionality relations of the body, several statistical indicators were calculated and are presented in tables 1 to 6.

Table 1 Dynamics of statistical indicators - Height

HEIGHT				
Statistical indicators	Experiment group		Control group	
	Initial t.	Final t.	Initial t.	Final t.
x	163.95	164.16	163.66	163.87
Median	165	165	165	165
Mo	165	165	166	166
Min	152	152	150	152
Max	173	173	176	176
Ampl	21	21	26	24
S	5.24	4.97	6.37	5.98
CV%	3.19	3.03	3.89	3.64
t	– 0.14 < 2.07		– 0.11 < 2.07	
p	p > 0.05		p > 0.05	

Table 2 Dynamics of statistical indicators - Weight

WEIGHT				
Statistical indicators	Experiment group		Control group	
	Initial t.	Final t.	Initial t.	Final t.
x	57.91	54.37	57.20	56.87
Median	56	53	55	54.5
Mo	56	51	54	53
Min	47	47	48	50
Max	71	64	76	72
Ampl	24	17	28	22
S	6.76	4.76	7.21	5.81
CV%	11.68	8.75	12.60	10.21
t	2.09 > 2.07		0.17 < 2.07	
p	p < 0.05		p > 0.05	

Table 3 Dynamics of statistical indicators - BMI

BODY MASS INDEX (BMI)				
Statistical indicators	Experiment group		Control group	
	Initial t.	Final t.	Initial t.	Final t.
x	21.53	20.17	21.32	21.19
Median	21.05	19.9	21.05	21.05
Mo	19.1	22.1	20.4	19.6
Min	17.7	17.7	17.4	18.1
Max	26.7	23.7	26.9	25.2
Ampl	9	6	9.5	7.1
S	2.58	1.65	2.32	2.00
CV%	11.98	8.21	10.88	9.48
t	2.16 > 2.07		0.21 < 2.07	
p	p < 0.05		p > 0.05	

Table 4 Dynamics of statistical indicators – Wais perimeter

WAIS PERIMETER				
Statistical indicators	Experiment group		Control group	
	Initial t.	Final t.	Initial t.	Final t.
x	69.41	65.54	67.52	67.12
Median	66.5	63	66.5	66
Mo	64	63	69	65
Min	59	59	58	62
Max	85	75	86	83
Ampl	26	16	28	21
S	7.34	4.58	6.18	5.02
CV%	10.58	6.99	9.15	7.48
t	2.19 > 2.07		0.24 < 2.07	
p	p < 0.05		p > 0.05	

Table 5 Dynamics of statistical indicators – Hip perimeter

HIP PERIMETER				
Statistical indicators	Experiment group		Control group	
	Initial t.	Final t.	Initial t.	Final t.
x	95.95	94.45	94.08	94.70
Median	96.5	95	94	95
Mo	97	95	95	95
Min	85	87	85	87
Max	107	102	110	106
Ampl	22	15	25	19
S	6.03	3.98	6.15	4.48
CV%	6.28	4.22	6.54	4.73
t	1.01 < 2.07		– 0.40 < 2.07	
p	p > 0.05		p > 0.05	

Table 6 Dynamics of statistical indicators – Waist – hip ratio

WAIST HIP RATIO (WHR)				
Statistical indicators	Experiment group		Control group	
	Initial t.	Final t.	Initial t.	Final t.
x	0.71	0.68	0.71	0.70
Median	0.70	0.69	0.71	0.70
Mo	0.77	0.70	0.72	0.72
Min	0.65	0.64	0.66	0.64
Max	0.82	0.74	0.81	0.78
Ampl	0.17	0.10	0.15	0.14
S	0.04	0.02	0.03	0.03
CV%	6.06	4.14	5.07	5.14
t	2.70 > 2.50		0.55 < 2.07	
p	p < 0.02		p > 0.05	

Conclusions

The morphological indices of the students in the experimental group changed during the preparation, the main aspects being observed:

- in case of the experiment group, there was a decrease in weight by 3.54 kilograms, and in the case of the control group by only 0.33;
- the BMI of the experiment group improved by 1.36, and all students recorded at the end a BMI which indicates a normal weight;
- the arithmetic mean of the waist perimeters decreased by 3.87 centimeters in the experiment group and only 0.4 centimeters in the control group. Referring to the values and risk levels of the metabolic complications given by the [9](december 2008), 16.67% of the students in the experimental group had the perimeter of the waist between 80-88 centimeters at the initial test, which meant an increased risk of the metabolic complications, and at the final test 0% of the students had the perimeter of the waist over 80 centimeters;
- the arithmetic mean of the perimeters of the hip registered a decrease of 1.50 centimeters in the experimental group, and in the control group, the arithmetic mean increased by 0.62 centimeters;
- WHR recorded a difference of 0.03 between the initial and final testing, and none of the students in the experimental group presented any health risk at the end, due to the fact that WHR were lower than 0.80;
- the coefficient of variability indicated at all final tests a high degree of homogeneity of the experiment group;
- In the case of the experiment group, the calculated t values were higher than the critical t values, at the significance thresholds 0.05, 0.02

and 0.01, the differences between the averages being statistically significant, $p < 0.05$, $p < 0.02$, $p < 0.01$.

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ÎMBUNĂTĂȚIREA INDICILOR MORFOLOGICI PRIN INTRODUCEREA TEHNICILOR DIN ARTELE MARȚIALE ÎN LECȚIILE DE EDUCAȚIE FIZICĂ

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Cuvinte cheie: *tae bo, indici morfologici, îmbunătățire, studente, lecția de educație fizică*

Rezumat

Tae Bo este una din cele mai impresionante și solicitante metode de antrenament și care totodată se bazează și pe principiile promovate de artele marțiale. Din punct de vedere al solicitărilor psihice și fizice cerute de această metodă de pregătire, lecțiile de Tae Bo sunt o adevărată provocare pentru studente și aduc multe efecte benefice în planul dezvoltării lor. În cercetarea de față, am pornit de la ipoteza că predarea unor tehnici din artele marțiale și îmbinarea acestora cu alte structuri motrice, într-un program aerob desfășurat pe muzică, va duce la îmbunătățirea indicilor morfologici ai studentelor din grupa experiment. Grupa experiment și cea de control au fost formate din câte 24 de studente de la specializarea Contabilitate și Informatică de Gestiune. Cercetarea s-a realizat pe parcursul unui semestru universitar, iar la sfârșit s-a demonstrat că loviturile de picior, de genunchi și de pumn efectuate pe toate traiectoriile, eschivele, blocajele, fandările și pivotările au adus efecte benefice asupra aparatelor cardiovascular și respirator, dar totodată au contribuit și la dezvoltarea armonioasă a corpului concretizată în valori mai bune ale indicilor morfologici măsurați.