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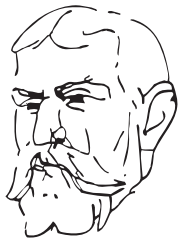

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REVIEW ARTICLES

CASE STUDIES

ORIGINAL ARTICLE

THE INFLUENCE OF TAE-BO ON THE DEVELOPMENT OF MOTOR POTENTIAL OF STUDENTS OF MEDICAL AND PEDAGOGICAL SPECIALTIES AND ITS EFFICIENCY IN THE PROCESS OF EXTRACURRICULAR ACTIVITIES

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Olena M. Shkola[1], Olena V. Otravenko[2], Viktoriia I. Donchenko[3], Valeriy O. Zhamardiy[3], Volodymyr G. Saienko[4], Hanna V. Tolchieva[2]

[1] MUNICIPAL ESTABLISHMENT «KHARKIV HUMANITARIAN PEDAGOGICAL ACADEMY» OF KHARKIV REGIONAL COUNCIL, KHARKIV, UKRAINE
[2] LUHANSK TARAS SHEVCHENKO NATIONAL UNIVERSITY, STAROBILSK, UKRAINE
[3] POLTAVA STATE MEDICAL UNIVERSITY, POLTAVA, UKRAINE
[4] ACADEMY OF MANAGEMENT AND ADMINISTRATION, OPOLE, POLAND

ABSTRACT

The aim: The purpose of this article was to study the impact of Tae-Bo on the development of motor potential of students and its effectiveness in the process of extracurricular activities.

Materials and methods: The experiment was conducted in the conditions of the educational process. An experimental group was formed, which was engaged in the traditional educational program of physical education and additionally three times a week, attended training in Tae-Bo. The control group was engaged in the traditional educational program on physical education in HEI. The following methods were used in the work to solve the research tasks: method of analysis and generalization of literature; surveys, questionnaires; methods of pedagogical observation and experiment; method of testing indicators of physical fitness; methods of mathematical statistics.

Results: When comparing the indicators of external manifestation of physical qualities of students of control (n = 60) and experimental (n = 60) groups at the end of the formative experiment, statistically significant differences ($p < 0.05$ and $p < 0.01$) were recorded in tests to determine coordination, strength, endurance, flexibility.

Conclusions: Thus, the introduction of a developed Tae-Bo training system in the extra-curricular process of HEI students contributed to the positive development of their motor abilities. Experimental work allowed to determine the place and role of modern Tae-Bo training in the extra-curricular process of HEI students.

KEY WORDS: fitness technology, students, Tae-Bo, health, healthy lifestyle

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INTRODUCTION

In modern terms, one of the most important issues of educational and educational work is the interest in physical culture. The problem of interest has always required increased attention, as the decline in interest in physical education leads to poor health, bad physical fitness and slow physical development of students [1]. In order to realize this task, it is necessary to introduce new approaches to educational, as well as post-audit, activities in higher educational institutions (HEI), which are based on cultural and health-improving principles and aimed at forming in the student youth a culture of health, values, needs, knowledge, skills and abilities to maintain and enhance health.

One of the most important types of student activities is fitness. Physical education of students of higher education institutions and their extracurricular work on the basis of fitness and fitness technology allows significantly increase their motivation for physical activity, increase indicators of physical development and functional readiness. The current program with the use of Tae-Bo in the educational process in HEI should be aimed at increasing the interest of students in physical education and involving them in systematic physical exercises, as well as for the development of motor skills and health. It contributes to the optimization of the educational process, increases the level of physical fitness, forms a set of sexual and personal needs and abilities that lie in the basis of personal competencies as a student, as well as the teacher, in accordance with the requirements of educational and professional activities.

Such a current trend of physical culture and health activities as fitness, can be seen as a means of improving not only the motor, but also general culture, expansion of the valeological worldview of a young person by such scientists as: O. Petryshyn [2], O. Caykina [3], S. Synytsya, L. Shesterova [4] et al. The introduction of Tae-Bo and fitness technologies in the extracurricular work of students is extremely important, since the issue of organization of extracurricular work is one of the most current problems of modern pedagogical science due to the fact that, improving the quality of higher education is impossible without finding new approaches, forms and methods.

THE AIM

The purpose of this article was to study the impact of Tae-Bo on the development of motor potential of students and its effectiveness in the process of extracurricular activities.

MATERIALS AND METHODS

The following methods were used in the work to solve the research tasks: method of analysis and generalization of literature; surveys, questionnaires; methods of pedagogical observation and experiment; method of testing indicators of physical fitness; methods of mathematical statistics.

We have analyzed 79 sources of scientific and methodological literature. The conducted analysis of literary sources by V. Zhamardiy [5], Z. Kozina [6], T. Krutsevych [7] et al. allowed us to highlight the problem of deficit of motor activity of students of Ukraine in curricular and extracurricular time and to identify ways to increase it. Surveys, questionnaires of teachers and students were conducted in order to study the facts that affect physical fitness, attitude of students to a healthy lifestyle as well as the definition of the role of fitness in the extracurricular work of students. The method of pedagogical observation is carried out during the whole experiment on the basis of the Municipal Institution "Kharkiv Humanitarian and Pedagogical Academy" of the Kharkiv Regional Council among 1st year students. We have observed the implementation of the content of the desired experimental fact, we also evaluated current educational achievements, made the selection of tools and methods of conducting extracurricular activities, defined the correspondence of volume and intensity of loading to possibilities of students. The pedagogical experiment consisted in developing and determining the influence of Tai-bo training and its introduction into the process of extracurricular work with HEI students regarding the formation of a healthy lifestyle, as well as the development of motor skills. Pedagogical testing consisted of conducting tests with the help of which we carried out monitoring of adolescents' motor preferences and evaluated their sport interests. Methods of mathematical statistics were used to process the results obtained during experimental studies. At the same time, the task was set to identify patterns in the measurements of the studied indicators and objectively assess the reliability of their changes.

The pedagogical experiment was conducted in the conditions of the educational process on the basis of the Communal institution "Kharkiv Humanitarian and Pedagogical Academy" of the Kharkiv Regional Council. The study was conducted during the 2019-2020 academic year.

Experimental group was formed (n = 60), which constisted from students of 1 year, who in addition to the traditional planned physical education classes additionally, under conditions of extracurricular work, three times a week, attended an hour and a half Tai-Bo training session at the Sports Club "Peremoha" ("Victory"). The control group (n = 60) was engaged in the traditional educational program on physical education in HEI and under the supervision of teachers of physical education attended section classes in their HEI.

The study was conducted in four stages. The first stage (September 2019) was dedicated to the theoretical study of the problem, where modern scientific and methodical materials of domestic and foreign authors were studied and systematized. At the second stage (September 2019 – November 2019) for effective development of Tai-bo training and its introduction into the extracurricular process of HEI students, fitness technology for effective increase of adolescent motor activity and the improvement of their motor skills has been developed and experimentally tested. At the end of this stage, a control test was conducted. The third stage of the study (December 2019 – May 2020) was aimed at identifying the advantages and disadvantages of the established Tai-Bo training in the extracurricular work in HEI concerning the formation of a healthy way of life, adjustment of complexes of special-preparatory exercises and determination of the optimal ratio of amount and intensity of physical activity during classes. At the fourth stage (September-October 2020) the results were summarized, comparative characteristics of the control and experimental groups of the study were established, conclusions were made and work was written.

The Ethics Commission of the Communal institution "Kharkiv Humanitarian and Pedagogical Academy" of the Kharkiv Regional Council has no comments on the methods used in this study.

RESULTS

To review the results of the experimental work regarding introduction of Tai-bo training in the extracurricular process, the formative stage of the pedagogical process was carried out.

The positive effect of the proposed system was evaluated by the changes in the obtained results of the control indicators of physical fitness during the formative stage of the pedagogical experiment. For this purpose, a control (n = 60) and experimental (n = 60) groups of students of the first year were formed.

The students of the control group attended only physical education classes provided by the curriculum of HEI. Students from the experimental group, in addition to the traditional planned physical education classes additionally, in the conditions of extracurricular work, three times a week, attended an hour and a half long Tai-bo training session. The effect of the proposed Tai-bo training was evaluated by the changes in the results of the control tests at the end of the formation experiment, which, according to the scientific literature, makes it possible to objectively determine the informative indicators of the current state of physical fitness of students. A comparative method was used to analyze the indicators of students of the control and experimental groups. The analysis was carried out in each group separately. The results of the control test of students at the beginning of the pedagogical experiment were compared with the indicators at the end of the experiment and percentage of changes was calculated.

Dynamics of functional characteristics of students' health during the formative experiment was conducted by the

Table I. Percentage comparison of functional characteristics of the health of students of the control group (n = 60)

Control parameters	Indicators at the beginning of the experiment	Indicators at the end of the experiment	Significance of differences	Difference, %
	X mean±б	X mean±б	p	
Pneumothaxometry, L / s	4.45±0.02	4.60±0.05	> 0.05	1.07
Physical condition index, c.u.	0.53±1.03	0.59±1.1	< 0.05	10.17
Evaluation of APCS, c.u.	2.10±0.01	2.23±0.17	> 0.05	4.21
Rufier index, c.u.	10.90±0.15	9.56±0.1	< 0.05	12.29

Table II. Percentage comparison of functional characteristics of the health of students from the experimental group (n = 60)

Control parameters	Indicators at the beginning of the experiment	Indicators at the end of the experiment	Significance of differences	Difference, %
	X mean±б	X mean±б	p	
Pneumothaxometry, L / s	4.45±0.16	5.81±0.21	< 0.01	30.56
Physical condition index, c.u.	0.52±1.07	0.75±1.04	< 0.01	44.23
Evaluation of APCS, c.u.	2.10±0.2	1.69±0.09	< 0.01	26.03
Rufier index, c.u.	10.95±0.31	4.3±0.18	< 0.01	60.23

Table III. Percentage comparison of indicators of the quality of motor abilities of students of the control group (n = 60)

Control parameters	Indicators at the beginning of the experiment	Indicators at the end of the experiment	Significance of differences	Difference, %
	X mean±б	X mean±б	p	
Shuttle run (4x9 m), s	11.20±0.01	10.97±0.01	> 0.05	2.10
Static balance with closed eyes, s	19.95±0.14	23.00±0.16	< 0.01	15.29
Running 60m from the high stage, s	9.66±0.04	9.63±0.04	> 0.05	0.31
Static force of 14 muscle groups, c.u.	9.00±1.01	9.15±0.91	> 0.05	1.67
Throwing the ball, m	6.23±0.04	8.23±0.08	< 0.05	32.10
Cooper's test, m	1988.70±0.13	2088.14±0.02	> 0.05	5.00
Bending of vertebral column, cm	8.20±1.1	10.56±1.02	< 0.05	28.78

Table IV. Percentage comparison of indicators of the quality of physical qualities of students of the experimental group (n = 60)

Control parameters	Indicators at the beginning of the experiment	Indicators at the end of the experiment	Significance of differences	Difference, %
	X mean±б	X mean±б	p	
Shuttle run (4x9 m), s	11.00±0.01	7.67±0.02	< 0.01	30.23
Static balance with closed eyes, s	20.12±1.00	37.25±0.09	< 0.01	85.12
Running 60m from the high stage, s	10.00±0.03	9.61±0.08	< 0.05	3.89
Static force of 14 muscle groups, c.u.	9.00±0.04	12.50±0.07	< 0.05	38.89
Throwing the ball, m	6.00±0.01	11.19±0.01	< 0.05	86.50
Cooper's test, m	1980.0±0.02	2578.95±0.01	< 0.01	30.25
Bending of vertebral column, cm	8.45±1.01	15.63±0.09	< 0.01	85.00

following control indicators: determination of inspiratory and expiratory power by pneumothaxometric parameters, physical condition index (by Ye. Pyrohova), assessment of the adaptive potential of the circulatory system (APCS) (by R. Baevsky), assessment of physical workability (Rufier index). Their parameters are given in tables I-II. Comparison of the obtained data allowed to determine the following differences. Inhalation and exhalation power in the control group of studied students during the formative experiment did not reveal statistically significant differences (p > 0.05)

and put 4.55 L / s at the beginning of the educational year (middle level) and 4.60 L / s at the end (middle level). The overall dynamics of the indicator was 1.07%. In the experimental group on the named indicator of the physical criterion formation of a culture of health of students by means of Tai-bo showed significant differences: 4.45 L / s and 5.81 L / s, which makes the dynamics of the transition from the middle to the high level by 30.56% ($p < 0.01$).

The results of determining the index of physical condition by the method of E. Pirogova in the students from control group at the beginning of the formative stage of the pedagogical experiment were 0.53 c. u. (middle level). However, at the end of the school year, there was an improvement to 0.59 c. u, indicating a general increase in the average level by 10.17% ($p < 0.05$). Statistically significant indicators ($p < 0.01$) were found in the experimental group during the study period. Thus, at the beginning of the formative experiment, the index of the physical condition was 0.52 c. u. (middle level), and after the evaluation at the end of the school year it was 0.75 c. u (high level) with an overall improvement by 44.23%. Assessment of the adaptive potential of the circulatory system revealed straining the mechanisms of adaptation of students at the beginning of the experiment: in the control group – 2.14 c. u. (low level) and in the experimental – 2.13 c. u. (low level).

At the end of the academic year, in the students from the control and experimental groups we recorded an adaptation with indicators of 2.22 c. u. (middle level) and 1.69 c. u. (high level), which in the first group decreased by 4.21%, and in the second group there was an increase by 26.03%. Statistical calculations indicated the absence of significant discrepancies ($p > 0.05$) between the recorded marks of students in the control group, and vice versa, sufficient viability in the experimental group ($p < 0.01$).

Statistically significant results ($p < 0.01$ and $p < 0.05$) were found for the Rufier index for both groups of students. Satisfactory physical fitness at the beginning of the academic year in both groups was recorded: 10.90 c. u. (middle level) – in the control group and 10.95 c. u. (middle level) – in the experimental group. At the end of the study in the control group, the indicators were 9.56 c. u, which made an improvement by 12.29% (middle level). In the experimental group of students, the improvement at the end of the year was 60.23% with the result of 4.35 c. u. (high level).

When comparing the functional characteristics of the health of students of the control ($n = 60$) and experimental groups ($n = 60$) at the end of the formative stage of the pedagogical experiment, statistically significant differences were recorded ($p<0.01$ and $p<0.05$) in indicators of pneumothaxometry, index of physical condition, estimation of adaptive potential of circulatory system and Rufier index.

When comparing the characteristics of the physical aspect of students' health in the control ($n = 60$) and experimental ($n = 60$) groups at the end of the experiment, statistically significant differences were recorded in all studied characteristics ($p < 0.05$ and $p < 0.01$). There is a higher level of manifestation of characteristics of the physical aspect of health among students of the experimental group, and between their output functional indicators of physical health and at the end of the experiment, statistically significant differences and a percentage improvement in the studied characteristics were observed ($p<0.05$ and $p<0.01$).

A study of the dynamics of the manifestation of sexual abilities of students during the formative stage of the pedagogical experiment was conducted, which was carried out with the help of a number of pedagogical tests: definition of coordination (shuttle run 4x9 m, static balance with closed eyes), speed (running 60 m from the high stage), strenght (total indicator of static force of 14 muscle groups), speed and power qualities (throwing a stuffed ball 2 kg with two hands from the bottom forward), endurance (Cooper's test), flexibility (bending of vertebral column by leaning forward from a position standing on a gymnastic bench). Their indicators are following (tables III – IV).

Dynamics of the manifestation of coordination abilities of students during the formative stage of the pedagogical experiment was evaluated with the help of the 4x9 m shuttle run and static balance with closed eyes. In the control group of students during the study period, statistically significant differences were found only between the indicators of the static balance ($p < 0.01$).

In the experimental group of students, statistically significant ($p < 0.01$) results were observed between all marks of pedagogical tests. The percentage improvement of the results of the students of the control group in the shuttle run 4x9 m was 2.10% with fixed marks at 11.20 s (average level) and 10.97 s (average level) ($p>0.05$). In the experimental group of students, the similar increase was 30.23% between the initial and final results: 11.00 s (average level); 7.67 s (high level) ($p < 0.01$).

The results of static equilibrium with closed eyes in the students of the control group at the beginning of the formative experiment had a mark of 19.95 s (low level), and at the end it was 23.00 s (high level), which is by 15.29% ($p < 0.01$) better. In the experimental group, similar indicators of students increased from 20.12 c (low level) at the beginning of the training period up to 37.25 c (high level) at the end of the experiment, which resulted in an overall improvement of 85.12% ($p < 0.01$).

According to the results of the test for speed (running 60 m from the high stage) no significant discrepancies were found between the recorded marks of students of both groups ($p > 0.05$). During the formative stage of the pedagogical experiment, they remained at the middle level. The percentage improvement of the results of the students of the control group in the 60 m run from the high stage was 0.31% with the recorded marks of 9.66 s and 9.63 s, and of the experimental group – 3.89% with the fixed marks of 10.00 s and 9.61 s, which is explained by the absence of running exercises in the selected system.

The level of appearance of power qualities of students in the process of the formative stage of the pedagogical experiment was determined by static force of 14 muscle groups. Changes in the dynamics of the total indicator of the static relative strength of 14 muscle groups, average

indicators which per 1 kg of weight of students, in the control group we noted an increase of 1.67% – from 9.00 c. u. to 9.15 c. u. in the absence of statistically significant differences ($p > 0.05$), remained at the middle level. In the experimental group of students, the result increased from 9.00 c. u. (middle level) to 12.50 c. u. (high level), which recorded an increase of 38.89% ($p < 0.05$).

Percentage improvement of the results of the students of the control group in throwing the stuffed ball with two hands from the bottom forward accounted for 32.10% with fixed marks of 6.23 m and 8.23 m ($p < 0.05$) within the low level. In the experimental group of students, a similar improvement between the initial and the final results 86.50% – 6.00 m (low level) and 11.19 m (high level) ($p < 0.05$).

Assessment of endurance dynamics based on the results of the Cooper's test determined the students of the control group at the beginning of the formative stage of the pedagogical experiment mark in 1988.70 m (middle level) with an improvement at the end of the academic year by 5.00% – 2088.14 m (middle level), However, statistical calculations indicated the absence of reliable discrepancies ($p > 0.05$) between the fixed badges of students of this group. In the experimental group of students, a similar pedagogical test revealed a distance of 1980.00 m (average level) at the beginning of the study, and at the end of the formative experiment – 2578.95 m (high level) in the presence of statistically significant differences ($p < 0.01$) with a total increase of 30.25%. Estimation of bending of a vertebral column when leaning forward from a standing position on a gymnastic bench found in students of the control group at the beginning of the experiment marks 8.20 cm (low level), and at the end of the school year there was a total increase of 28.78% and amounted to 10.56 cm (middle level) ($p < 0.05$). In the experimental group of students, similar results at the beginning of the formative experiment were 8.45 cm (low level), and after the second survey an improvement of 85.00% with a mark of 15.63 cm (high level) was recorded ($p < 0.01$). When comparing the indicators of the appearance of physical qualities of students of the control ($n = 60$) and experimental ($n = 60$) groups at the end of the formative experiment statistically significant differences ($p < 0.05$ and $p < 0.01$) were recorded in tests on the definition of coordination, strength, endurance, flexibility.

DISCUSSION

The introduction of Tai-Bo is due to the availability, popularity, variety of means, its wide stratification, great opportunities to meet the needs for physical activity of young people involved both in an educational institution and outside the classroom.

Therefore, the process of physical education and extra-curricular work of students should make up for the lack of motor activity, which is created in modern conditions of life, and also contribute to the development and normal functioning of all organs and systems of the young organism.

Tai-Bo occupation in the educational process and outside the classroom has a significant developmental effect on the body of students and requires physical education specialists to introduce new pedagogical technologies to solve specific problems of acquiring modern physical education knowledge by students, developing the necessary motor skills, skills and abilities, positive motivations occupation.

CONCLUSIONS

Thus, the introduction of a developed Tai-Bo training system in the extra-curricular process of HEI students contributed to the positive development of their motor abilities. The changes that took place during the study should guide students to uninterrupted self-improvement and self-creation. In the experimental group, students who attended extra-curricular Tai-bo training, systematically acquired knowledge and practical skills to increase motor activity and the development of motor skills. Organizational and methodological resource provided support and introduction of adapted forms and methods of teaching, aimed at the formation of knowledge, skills and abilities for leading a healthy lifestyle and targeted impact of Tai-Bo tools on improving the level of physical fitness of students. Experimental work allowed to determine the place and role of modern Tai-bo training in the extra-curricular process of HEI students.

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ORCID and contributionship:
Olena M. Shkola: 0000-0003-3013-0423 [A-D]
Olena V. Otravenko: 0000-0001-8308-5895 [B, C, E, F]
Valeriy O. Zhamardiy: 0000-0002-3579-6112 [A, B, D, F]
Viktoriia I. Donchenko: 0000-0002-9665-7204 [A, D, E, F]
Volodymyr G. Saienko: 0000-0003-2736-0017 [E, F]
Hanna V. Tolchieva: 0000-0001-7023-8194 [E, F]

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CORRESPONDING AUTHOR
Viktoriia I. Donchenko
Poltava State Medical University
23 Shevchenko 23 st., 36011 Poltava, Ukraine
tel: +380662674172
e-mail: vik.donchenko@gmail.com

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