

## THE METHOD OF APPLICATION OF HEALTH SYSTEMS BODYFLEX AND PILATES IN PHYSICAL EDUCATION OF STUDENTS

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**Annotation.** *Purpose:* to justify the use of a new technique for complex Bodyflex and Pilates using information and communication technologies. *Material:* the study involved 46 students. Conducted teacher testing: lean body forward from a sitting position ( flexibility test ), shuttle run, standing long jump seats, running 100m, lifting the body from a prone position in the saddle (the number of times for 1 min), flexion-extension in the hands of the emphasis lying, running 2000 and 3000m. *Results:* the effect of the integrated application of this technique to the level of physical fitness of students. A system for applying the Bodyflex Pilates and using information and communication technologies. The system consists of the author's modification Bodyflex and Pilates, and use their mutual coupling copyright information technology. Internet blog created as a social group called "Sport and motivation." In a blog posted motivational pictures, practical tips for healthy and dietetic nutrition, information on healthy lifestyle, music for workouts. The blog highlights some fitness techniques open threads ( discussion ) for on-line communication between users. A significant increase in the results of educational tests of physical fitness among students. *Conclusions:* the technique of complex applications Bodyflex and Pilates using information and communication technologies has shown a positive effect of complex application of this technique to the level of physical fitness of students.

**Keywords:** students, preparedness, information, communication, education, culture, health, technology, communication, Bodyflex, Pilates.

### Introduction

Recent years many researches have been paying attention to development of students' motion abilities in the process of physical education and to increasing of students' health related trainings' effectiveness [1, 7, 8, 9, 14, 15], as far as nearly 90% of students have deviations from normal state and more than 50% - low level of physical fitness [17, 20, 21, 25, 26, 27]. In opinion of a number of authors [9, 28, 29, 30, 31, 32], most of students have no demand in taking care of own health, they have no wish to practice physical exercises, including sphere of leisure [22, 23, 24, 33]. Students are indifferent to content of compulsory classes in physical education [8, 9].

The problem of students' health is remaining still more urgent in connection with difficulties of social-economic character [8]. Reduction of students' motion functioning is explained by low level of physical culture knowledge, weak organizational-methodic and material provision of academic process, disadvantages of physical education's organization [1].

In this connection implementation of new methodic of motion abilities' training in students' physical education, with the help of modern informational-communication technologies, is urgent and timely.

The research has been fulfilled in compliance with combined plan of scientific-research works for 2011-2015 as per topic 2.4 "Theoretical-methodic principles of individualization in physical education and sports" (state registration number: 0112U002001) and by scientific work, financed from budget of Ministry of education and science for 2013-2014 "Theoretical-methodic principles of application of information, pedagogic and medical-biological technologies for formation of healthy life style" (state registration number 0113U002003).

### Purpose, tasks of the work, material and methods

*The purpose of the research* is to work out methodic of complex application of bodyflex and pilates with the help of informational and communication technologies and to determine influence of complex application of such methodic on students' physical fitness.

*The methods of the research:* pedagogic testing: forward torso bent from sitting position (test for flexibility, shuttle run, long jump from the spot, 100 meter' run, torso rising from lying position into sitting (quantity of times per 1 minute) pressing ups, 2000/3000 meters' run.

In the research 46 students of Kharkov national pedagogic university, named by G.S. Skovoroda, took part; from them control group included 24 students and experimental group consisted of 22 students.

### Results of the research

In organization of physical education classes by authors' methodic with 1-3<sup>rd</sup> year students of KNPU, named after G.S. Skovoroda, we based on the fact that for ensuring of motion functioning, which would correspond by form and content to health, intellectual and mental characteristics of the mentioned contingent, it was necessary to create conditions for relatively comfort state of supporting motor system, of energy losses at high level, of development of students' physical qualities, functional abilities and creation of Body&Mind integrity atmosphere, atmosphere of self cognition, not standard and not ordinary structure.

As an experimental program of physical education, we worked out system of bodyflex and pilates application with the help of informational-communication technologies.

This system consists of authors' modification of bodyflex and pilates, their combination and authors' informational technologies purposed for health related fitness.

In this connection with necessity in increasing of students' knowledge of physical culture problems [2, 3, 4, 5, 6, 16, 19] we created internet blog on server "In contact" as a social group, named "Sports and motivation. Nothing personal" (<http://vk.com/club13486191>), on which we located motivating photos, practical recommendations on correct diets, information about healthy life style, music for trainings; in blog we elucidate some fitness methodic, open topics for on-line discussions. With the help of information-communicational technologies students, as participants of physical education process, can be "experimentalists over themselves" be their determining of dynamic of physical indicators' change, resulted from trainings by offered methodic; on this base students could independently correct development of motion abilities both during academic classes and in independent trainings. The created internet blogs are effective mean for perception of material by students (users), which permit to quickly and with maximal comfort receive required information on physical education and human physical culture, practical skills in independent trainings and correct information about prophylaxis and treatment methods of fitness, to carry out self testing of the mastered material and participate in on-line discussions, devoted to urgent problems of human health. Internet blog is a convenient, effective and reliable in usage and has simple and clear interface.

One of aspects of our internet blog was elucidating of problems, connected with application of modern health related technologies, such as bodyflex and pilates.

As per official version bodyflex was created in 80-s of 20<sup>th</sup> century by Grir Childers (<http://pererodjenje.info/sport/dyxatelnaya-gimnastika>, <http://lib.rus.ec/b/180845/read>). Bodyflex was known even 5000 years ago. Practically all breathing methodic, including bodyflex, are based on Yoga breathing. In yoga there is such concept as "uddiyana-bandha". Word "uddiyana" means in Sanskrit "lifting, flight", the word "bandha" is translated as "lock, blocking", but as a rule, the word "bandha" is not translated in Russian. Uddiyana is a basic technique of ha-tha yoga. Yogis say that fulfillment of uddiyana-bandha correctly and regularly can cure any disease [34].

People have been using breathing exercises since ancient time. In different ages attitude to such exercises changed, but interest to them has never decayed. Specialists from different countries consider breathing gymnastic to be efficient factor, which facilitates health improvement and increasing of human organism' resistance to different diseases.

Oxy-size is a breathing methodic, which has no counter indications. Oxy-size differs from bodyflex by easier breathing technique and simplified exercises. Load varies depending on individual characteristics (<http://pererodjenje.info/sport/dyxatelnaya-gimnastika>).

Difference of authors' methodic from classic bodyflex and oxy-size implies in the following:

- period of training is 60 minutes, instead 15-20 minutes;
- breathing exercises combine with general physical exercises;
- quantity of exercises is increased from 15 basic exercises to 120 exercises;
- exercises not only facilitate reduction of body mass, but also development of such qualities as strength, flexibility, coordination;
- the authors created separate complexes for men and women;
- exercises are fulfilled not only statically but also dynamically on breathing pause;
- training programs have been developed not only for fulfillment in gym but also for outdoors conditions.

Pilates is a complex of exercises for all body. Based on combination of oriental and western forms of training (yoga, meditation, oriental martial arts, Graeco-Roman wrestling and boxing), which help to develop, first of all, flexibility and mobility. Pilates system regards all body as a unity [24, 33]. It involves in movement absolutely all body. Coordination adds graciousness to movements.

It should be noted that idea of exercises' construction on the base of natural smooth alternating is noticed also in works by Zh.L. Kozina, V.Yu. Kozina [10-13, 16]. The authors offered methodic of gymnastics for pregnant women, newly born and infants as well as for children of age from 1 to 7 years old. For example gymnastic for pregnant is characterized by the following principles:

1. Movements are fulfilled by all body along lines of flux of human energetic field [10, 13, 16]. They are the most rational and energetically saving from the points of view of bio-mechanic and physiology of movement. In every movement all parts of body participate consequently up to finger tips by principle of dynamic wave. Trajectories of movement, with it, are tied to the so-called "lines of flux" or "circle" of human energetic field.

Conception "line flux" was introduced by oriental medicine [13], based on knowledge about energy motion along meridians, which pass both inside human body and out of it, forming the so-called energetic sphere of a man. To say simpler, energetic sphere resembles lines of flux of magnetic field, which are located in circular form around magnet and pass through poles inside magnet.

All physiological processes in organism also go in circular way: feedback in central nervous system (CNS), reflex arch and reflex ring, big and little circles of blood circulation and so on. Besides, vio mechanical motions also go mainly in circular way by main planes (horizontal, vertical sagittal) [13].

Highly coordinated movements of sportsmen also are circular in their basis. Similar to sportsmen's movements, giving birth process shall be coordinated on all levels: molecular, bio-mechanical, physiological. That is

why circular movements, passing through “main planes” of human body, are the basis of our method. Such form of movements is the most rational bio-mechanically and energetically and causes minimum of tiredness [13, 16].

2. Waving backbone’s movements prevail in our gymnastic and improve blood circulation, influence on organism as a system; they are similar to waving movements of smooth muscles and body movements during strains.

3. Our gymnastic is constructed as a dance, in which one movement gradually comes from the previous that develops saving character and plasticity of movements and is required for natural giving birth.

4. To every movement of complex a line of verse about nature corresponds. It is directed on activation of “cellar memory” about harmonious processes and normal deliveries, as far as in nature the process of delivery has been “trained” excellently for million years of evolution.

The offered in our research bodyflex and pilates methodic is a continuation and expansion of pilates system, a supplement of system of Zh.L. Kozina et al. [10-13, 16].

As a result of application of health related pilates’s and bodyflex’s system in authors’ modification in students’ physical education during 2 semesters we observed confident increasing of pedagogic tests’ results (for physical fitness) of experimental group’s students, which was trained by our methodic (see fig. 1, 2).

Confident changes of physical fitness indicators were registered in tests “long jump from the spot” ( $1.85\pm 0.27$  m before experiment and  $2.05\pm 0.19$  m after experiment ( $t=3.59$ ,  $p<0.001$ ) for boys and  $1.65\pm 0.20$  m before experiment and  $1.82\pm 0.14$  m after experiment ( $t=9.75$ ,  $p<0.001$ ) for girls (see fig. 1, 2) while in control group changes of such tests’ indicators were not confident ( $p>0.05$ ) (fig. 1, 2). Besides, we obtained confident changes of results in test “Pressing ups, quantity of times” in experimental groups, both of boys and girls ( $35.28\pm 6.32$  times before experiment and  $41.00\pm 5.1$  times after experiment ( $t=3.1$ ,  $p<0.001$ ) for boys and  $15.23\pm 7.57$  times before experiment and  $21.00\pm 5.90$  times after experiment ( $t=2.90$ ,  $p<0.05$ ) for girls) that convincingly shows purposefulness of bodyflex and pilates in authors’ modification application in students’ physical education. In control groups such changes were not confident ( $p>0.05$ ) and in some cases have trend to worsening among girls.

The same results were received in test “rising from lying position into sitting, q-ty of times during q minute”: in experimental group of boys results increased from  $37.6\pm 7.34$  times to  $49.8\pm 6.16$  times ( $t=4.87$ ,  $p<0.001$ ) (see fig.1) while in control group such changes were not confident (see fig.1).

In girls’ group, in results of this text there were also confident changes: from  $32.5\pm 8.62$  times to  $42.25\pm 5.21$  times ( $t=4.69$ ,  $p<0.001$ ); in control group such changes were not confident ( $p>0.05$ ) (see fig.2).

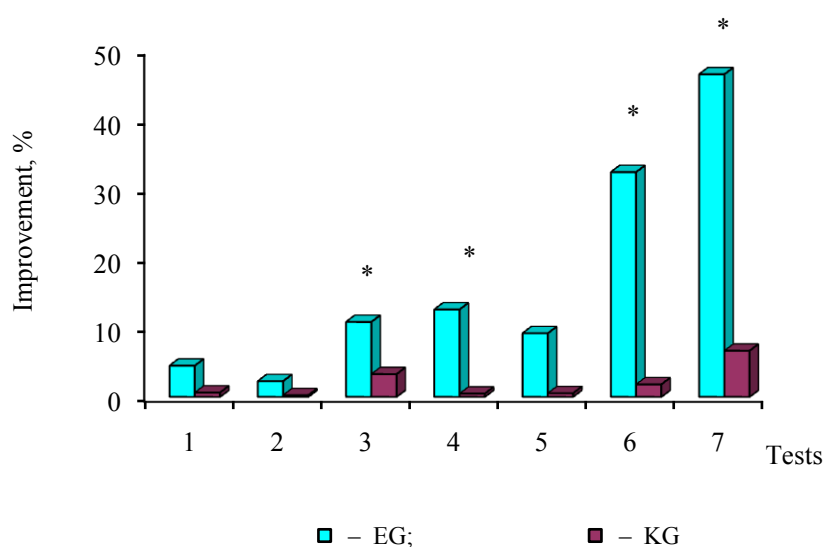


Fig.1. Change of physical fitness of control group students ( $n=24$ ) and experimental group students ( $n=22$ ) before and after experiment:

1 – 100 meters’ run, sec;

2 – 2000 meters’ run, min;

3 – Long jump from the spot, m;

4 – Pressing ups, q-ty of times;

5 – Shuttle run, sec;

6 – Rising of torso from lying into sitting position, q-ty of times for 1 minute;

7 – Test for backbone flexibility, cm;

\* – differences are confident with  $p<0.05$ ;

EG – experimental group;

KG – control group.

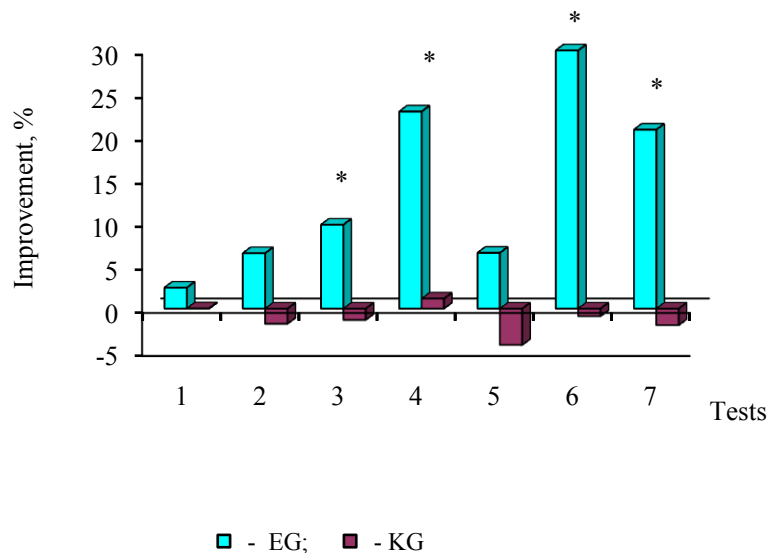


Fig.2. Change of physical fitness of control group girl students (n=24) and experimental group students (n=22) before and after experiment:

- 1 – 100 meters' run, sec;
- 2 – 2000 meters' run, min;
- 3 – Long jump from the spot, m;
- 4 – Pressing ups, q-ty of times;
- 5 – Shuttle run, sec;
- 6 – Rising of torso from lying into sitting position, q-ty of times for 1 minute;
- 7 – Test for backbone flexibility, cm;

\* – differences are confident with  $p < 0.05$ ;

EG – experimental group;

KG – control group.

It should be noted that test “rising of torso from lying position into sitting, q-ty of times for 1 minutes” shows strength of abdomen muscles, i.e. the muscles, to development of which pilates system is oriented and that is why confident changes in results of this test, registered in experimental group, witness about purposefulness of this methodic for strengthening of abdomen muscles.

The described above tests show mainly strength of girdle muscles, abdomen muscles and speed-power abilities, which were expressed in increasing of results in tests “long jump from the spot”. It should be noted that there was noticed a trend to results' increasing in 100 meters' run, registered in experimental group of boys, though changes were not confident ( $p > 0.05$ ). We think that with combination of our methodic with running exercises, positive results would be more expressive.

Positive influence of bodyflex and pilates systems are witnessed also by confident increasing of backbone flexibility's indicators: in boys' experimental group from  $10.00 \pm 2.13$  cm to  $14.65 \pm 2.25$  cm ( $t = 2.78$ ,  $p < 0.05$ ) (fig.1) and from  $14.00 \pm 4.23$  cm to  $16.92 \pm 3.68$  cm ( $t = 2.50$ ,  $p < 0.05$ ) in girls' experimental group (see fig.2). In control groups such changes were not confident ( $p > 0.05$ ) (see fig. 1, 2).

After experiment control and experimental groups, which did not differ confidently before experiment ( $p > 0.05$ ) became confidently different after experiment ( $t = 2.99$ ,  $p < 0.05$ ) (see fig.2).

Thus, application of our system of bodyflex and pilates health related technologies facilitates increasing of power and speed-power fitness indicators as well indicators of flexibility that is an important aspect of students' physical education.

#### Conclusions:

1. We have developed system of application of bodyflex and pilates methodic with the help of information-communicational technologies. The system consists of authors' modification of bodyflex and pilates, their combination and authors' information technologies. We have created internet blog on server “In contact” in the form of social group, named “Sports and motivation”, in which we located motivating photos, practical recommendations on diets, information on healthy life style, music for training; in blog some fitness methodic are elucidated, on-line discussions are open.

2. We have determined that as a result of application of health related pilates and bodyflex systems in authors' modification in students' physical education during 2 semesters we registered confident improvement of pedagogic tests results for experimental group students' physical fitness. In control groups such changes were not confident and in some cases (in girls' group) have trend to worsening.

In the future we plan to improve health related technologies' system oriented on development of students' motion abilities.

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