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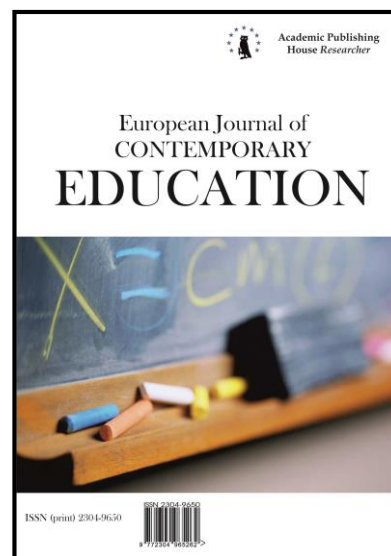
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## Integration of Educational and Sports technologies in Youth Wellness Tourism

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### Abstract

The article reveals the potential of the youth tourism, addressing a number of problems of higher education: formation of a general cultural competence, preservation and strengthening of students' health, enhancing educational progress, motivating the physical self-improvement, contributing to the formation of healthy lifestyle values and developing social adaptation skills. The need to integrate these tasks with educational, sports, medical and biological technologies is scientifically grounded. The application of sports and wellness tourism in the educational potential of curricular and extracurricular activities of the University was developed as a theoretical model. This work describes the progress and results of its experimental testing. The results show that the sports and wellness tourism practices in higher educational establishments (on the basis of integration of educational, sports, medical and biological technologies) contribute to the formation of a general cultural competence, improve students' health, increase their fitness and motivate the physical self-improvement, as well as contribute to the development of physical qualities, in both men and women.

**Keywords:** higher education, sports and wellness tourism, educational potential of sports and wellness tourism.

### 1. Introduction

A relevant problem of the modern Russian society is the decline in health, and as a result, the decrease of working efficiency. Medical and biological indicators of the Russian younger generation's health are on decline. This is due to the environmental issues, the increase of stress in the society, the lack of the promotion of a healthy lifestyle in families, schools and in media (Kozlov, 2014), a widespread smoking habit (Pugachev et al., 2012), reduction of employment rate

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and a lack of youth's interest in education (Kuzmenyuk, 2010; Proskuryakova, Zinchuk, 2012). In addition, the current epidemiological situation on drug abuse is a serious problem for the society (Popov, Verbetsky, 2014; Hadland et al., 2009), especially in connection with an increase of the psychoactive substances abuse among the young people (Zaretsky et al., 2008; Allaste, Lagerspetz, 2002; Pecoraro et al., 2013). The physical and mental health condition of the young people is causing a serious concern (Kotova, 2007; Shafii, Shafii, 2003; Weinstock et al., 2004): only 15 % of school leavers can be considered healthy; 50 % have 2-3 chronic diseases; 30 % of young men cannot be drafted into the army (Dartau, 2010; Dolgikh et al., 2013; Pashin, 2012).

This situation is due to the low motivation for physical self-improvement, lack of motion activity, as well as not practicing physical culture and sports and the inability for taking care of one's health.

One of the ways of eliminating this issue is the inclusion of the vocational formation of competences associated with the application of physical culture potential in the achievable targets, in order to improve performance, to provide full social and professional activities, to reduce risks of health threats during the professional activity.

These competencies are included in the general cultural mandatory list in almost all the current Federal State Educational Standards of higher education. So, for the bachelors of 38.03.01, Economics there are the following general cultural competences:

- Ability for self-organization and self-education (GCC-7);
- Ability to use the methods and means of physical culture to provide full social and professional activities (GCC-8)

For the bachelors of 43.03.02, Tourism:

- Ability for self-organization and self-education (GCC -7);
- Ability to choose the proper level of physical fitness to provide full social and professional activities, promote active longevity, healthy lifestyle and disease prevention (GCC -7).

However, despite the objectives in the mandatory results' requirements, according to the current Federal State Educational Standards of higher education, the practical implementation of the system of higher education in Russia is in need of improvement. The analysis of the scientific literature shows that students' health is not improved but in some cases is on decline during the educational process (Dartau, 2010; Pashin, 2012; Pozdeyeva, 2008). According to 58 % of boys and 29 % girls one of the reasons for that is the inefficient organization of physical education at the University. Special medical groups students, the number of which in some Universities is more than 50 % cause concern (Romanovsky, 2015). Firstly the health decline leads to the formation of students' respiratory system defects as well as musculoskeletal and digestive systems diseases, to a lesser extent – to the diseases of the nervous and circulatory systems (Kobylyatskaya et al, 2015). The most important indicator of the cultural identity is the active form of leisure (active recreation and sports), but the proportion of students choosing it in recent years has decreased from 31 to 17 % (Romanovsky, 2015).

Sports and wellness tourism has a high potential for the formation of these general cultural competences, as well as for solving a number of urgent problems of the higher education. However, this potential has not been studied and therefore is not fully used in the educational practices and the integration of the educational, sports and biomedical technologies is not carried out. The article fills this gap.

## **2. Materials and methods**

In this study, we relied:

- On the psychological, pedagogical as well as on the medical and biological studies of sports and wellness tourism potential (Boeva et al, 2013; Gaptar, 2014; Ignatiev, Ignatiev, 2007; Kozlov, 2014; Fedotov, Vostokov, 2003; Malashenkova, 2009, etc.);

- On strategic and normative documents of higher education of the Russian Federation: The concept of the long-term socio-economic development of the Russian Federation up to 2020 (approved by the Decree of the Russian Federation, November 17, 2008 № 1662-r), the Concept of the Russian education modernization for the period of up to 2020, the Federal State Educational Standards of higher education, the Guidelines for updating the existing Federal State Educational Standards of higher education with the professional standards, the Guidelines for the development of the basic professional educational programs, and other professional programs, with the relevant

professional standards (approved by the Ministry of Education of Russia 01/22/2015 number DL-1/05 vn), etc.

The following methods were used to achieve the objectives:

- Theoretical: the analysis of the scientific literature, synthesis, integration, modeling;
- Empirical: pedagogical experiment, anthropometry (height, weight, body mass index – BMI), spirometry (vital capacity of lungs, forced vital capacity of lungs, the amount of exhaled air for 1 second forced expiratory – the FEV<sub>1</sub>, peak expiratory flow – the PEF), cardio interphalography on the "Varicard" complex (heart rate – HR, integrated indicator of the functional state), functional tests (PWC 170 test, the maximum oxygen consumption – the MOC, somatic health status).

### **3. Discussion (including the analysis of the scientific literature on the subject).**

At present sports and wellness tourism exists as a part of the physical culture, elements of which are: physical education, sport, physical recreation and rehabilitation.

This kind of tourism is performed in the form of recreation and public activities, having a great pedagogical impact on the young people.

The sports and wellness tourism is established as one of the most effective and attractive means of recovery, as it is proven by the long-term practice.

Sport and wellness tourism includes (Kozlov, 2014; Fedotov, Vostokov, 2003):

- educational process by means of tourism, widely used in the system of extracurricular education;
- self-conducted wellness tourism;
- commercial tourism with the organization of active travel for leisure, excursions, various forms of hobbies and entertainment;
- weekend trips as wellness and cognitive activity;
- sport activities in the system of physical culture and sports;
- search and research activities in the cultural and historical life of our society.

In the scientific literature sports and wellness tourism is often seen as a pedagogical process (Ignatiev, Ignatiev, 2007), which aims at achieving the following objectives:

- development and improvement of biological body forms and functions, motor skills, mental, physical, moral, volitional and social qualities;
- the formation of motor skills and the development of physical qualities;
- improving the morphological, functional, moral and volitional manifestations of a person;
- physical development and tourism training aiming to the physical improvement.

The essence and potential of sports and wellness tourism is determined by the efficiency of its impact on the prevention of diseases (Boeva et al, 2013; Gaptar, 2014).

In this regard, the specific characteristics of sports and wellness tourism are (Malashenkova, 2009):

1. the possibility of forming a complex of physical and spiritual qualities, ways of the inner cognition and the environment perception, maximizing the beneficial effects of the natural environment, the possibility of self-affirmation;
2. a healthy lifestyle formation;
3. the ability to target all social and age groups.

Sports and wellness tourism as a means of active upbringing influences positively the formation of vital human skills, motor skills, develops the moral, volitional and intellectual qualities of an individual.

The analysis of sports and wellness tourism's organization and strategic targets of the higher education in the Russian Federation made it possible to determine the **pedagogical potential of sports tourism in higher education**, which is:

- formation of general cultural competences, represented in the Federal State Educational Standards of higher education in all areas of training (capacity for self-organization and self-education, the ability to use the methods and means of physical training to ensure full social and professional activity);

- increasing the work and educational efficiency,
- increasing the motivation of physical self-improvement;
- preservation and strengthening of young people's health, healthy lifestyle values shaping;
- stimulating young people's interest in the historical and cultural heritage of Russia, protection of the environment.

The analysis of the scientific works on the nature and conditions of the organization of sports and wellness tourism show that the most important condition for the efficient use of the sports and wellness tourism's pedagogical potential in the system of Russian higher education is the **integration of the three types of forms, methods and technologies**: educational, sports and medical-biological.

**The basis for the integration** of these technologies is the **direction of their use**:

1. Formation of the general cultural competences related to the ability of the methods and means of physical training in order to ensure full social and professional activity.
2. Increase in the overall performance of an individual, as a consequence – increase of the educational progress, formation of the general cultural competences related to the ability to self-organize.
3. Preservation and strengthening of students' health, shaping healthy lifestyle values.
4. Increase in motor activity, motivation and developing skills of physical self-improvement.
5. Social adaptation skills development.
6. Stimulation of cognitive interests, including the interest in the historical and cultural heritage of Russia and protection of the environment.

**The theoretical model of pedagogical potential of sports and wellness tourism in the curricular and extracurricular activities of the University** was developed for a more efficient application of pedagogical potential of sports and wellness tourism. The structure of the model consists of the following units:

**Target and-functional unit** reveals:

- *functions of sports and wellness tourism as a means of increasing the effectiveness of curricular and extracurricular work at the University:*

*Curricular activities:*

- 1) **The activation** function: increase in mental performance, the level of the functional state of the cardiovascular, respiratory and muscular systems and as a result - a progress in educational disciplines.
- 2) **Informative**: increase in educational motivation, of cognition of nature and culture of the region and country.
- 3) **Self-educational**: motivation of the physical self-improvement, promotion of the techniques of self-knowledge and the environment.
- 4) **Resultative**: increase of students' fitness, formation of common cultural competences related to the use of methods and means of physical culture in order to provide full social and professional activity, the ability for self-organization and self-education.
- 5) **Developing**: motor skills development.

*Extracurricular activities:*

- 1) **Wellness**: healthy lifestyle promotion, preservation and strengthening of the young people's health;
- 2) **Preventive**: prevention of bad habits, addictions, socially significant diseases.
- 3) **Integrative**: a complex formation of physical and spiritual qualities.
- 4) **Patriotic**: promoting patriotism, stimulating young people's interest to historical and cultural heritage of Russia.
- 5) **Developing**: development of physical (strength, endurance, accuracy and movement speed, etc.), psychological (will power, patience), moral (mutual aid skills) qualities.
- 6) **Ecologic**: stimulating interest in environmental protection, maximize the abilities of the beneficial effects of the natural environment, mastering eco-sports technologies, ecotourism.
- 7) **Socializing**: the development of psycho-physical, moral, volitional and social qualities, social adjustment skills.

- 1) *Goals of using sports and wellness tourism's educational potential* in the organization of educational and extracurricular activities at the University:
  1. General cultural competences formation.

2. Professional and self-improvement motivation development.
3. Teamwork and mutual aid skills development.
4. Development of students' skills in sports and wellness tourism's potential in professional and career growth.

**The informative unit** of the model reveals additional elements to be included in the educational and extracurricular activities in order to achieve the efficient application of the sports and wellness tourism's educational potential:

*Curricular activities:*

– a significant amount of additional training classes of sports and wellness tourism, including thematic workshops on environmental tourism technology, trips to the nature, excursions, one-day hiking is introduced to the "Physical education" discipline;

– sections on physiology and hygiene of mental work, the scientific organization of the educational work of the student, by means of sports and wellness tourism are included in variative propaedeutic disciplines ("Introduction to the profession", "Fundamentals of the student's work", etc.);

– project activities of students, including the development and implementation of professional socially-oriented projects using sports tourism potential, including volunteer projects (for example, a series of guided tours, trips for students) is included in the content of various educational disciplines.

*Extracurricular activities:*

– students' tourist club organization;

– sports and wellness tourist club organization;

– conducting training sessions designed to develop endurance, activation of motor activity and the development of other qualities and skills necessary for hiking during the club meetings;

– organization of tourist rallies and other University sporting events, including sports and wellness tourism competitions;

– Participation of the University volunteer organization in projects related to sports and wellness tourism.

**Structural logic unit** of the model discloses *an algorithm (sequence) of the use of sports and wellness tourism in the educational potential of the curricular and extracurricular University activities:*

Step 1. Diagnostics of the body functions with the complex of medical and biological technologies: anthropometry (height, weight, body mass index - BMI), spirometry (vital capacity of lungs, forced vital capacity of lungs, the amount of exhaled air for 1 second forced expiratory - the FEV<sub>1</sub>, peak expiratory flow - the PEF) cardio inter-phalography performed on the "Varicard" complex (heart rate - HR, integrated indicator of the functional state), functional tests (test PWC 170, the maximum oxygen consumption - MOC, somatic health status).

Step 2. Discussion of the diagnostic results with students individually and in groups. Giving medical recommendations for health improvement.

Step 3. Testing students in accordance with the GTO (Ready for Labor and Defense) complex standards.

Step 4. Discussion of the GTO complex standard results individually and in group conversations and discussions. Recommendations of sports, psychological and pedagogical character for physical self-improvement, efficiency increase, applying of methods and means of physical culture to provide full social and professional activity.

Step 5. Conducting a series of thematic lessons on the use of sports and wellness tourism's ability to deal with the students' personal and professional problems, including classes on the natural environment tourism techniques.

Step 6. The organization of a systematic increase of the students' motor activity, including training classes at the gym, walks in the nature, excursions, one-day hiking trips etc.

Step 7. Students' development and implementation of projects on the use of sports and wellness tourism potential addressing personal and socially relevant problems, including volunteer projects.

Step 8. Re-diagnostics of students' health condition. Discussion on the changes and affecting factors.

Step 9. Repeated testing in accordance with the GTO complex standards. Discussion on the

changes and affecting factors.

**Instrumental and process unit** of the model reveals a pedagogical toolkit of using the potential of the sports and wellness tourism in the curricular and extracurricular activities of the University. This toolkit includes three groups of forms, methods and technologies:

- *psychological and pedagogical*: lectures, master classes, individual and group discussions, counseling based on the results of diagnostics of physiological indicators of health, psychological trainings, discussions, development and implementation of social projects, professional and personal self-designing, sporting events, celebrations, festivals, tours, etc.;
- *sport*: GTO complex standards performance testing, highly active motor activity in the ecological environment, walks in the nature, one-day hiking trips, thematic lessons on the tourism technique in the natural environment, etc.;
- *biomedical*: diagnostics of the functional state of body systems of students, medical recommendations based on the results of diagnosis, functional tests, anthropometry, spirometry, cardio intervalography, etc.

**Organizational and administrative units** of the model describe the main subjects involved in the organization of curricular and extracurricular activities including the use of pedagogical potential of sports and wellness tourism, as well as the forms and organizing and coordinating methods.

The following University units can be involved in the organization of the curricular and extracurricular activities applying the educational potential of the sports and wellness tourism:

- Head of the sports club;
- Heads of the sports sections;
- Head of the Department and instructors of the "Physical Education" discipline;
- Head teacher and specialized departments' lecturers of Tourism (if any);
- Dean of the Faculty of Tourism (if available), and his deputies;
- The director and staff of the health center (dispensary staff, basic University clinics);
- Doctors of the University medical centers;
- Head of the University educational work;
- Head of the Volunteer Centre;
- Chairman of the Student Council sports section;
- Leaders of student associations, related to sports and wellness tourism;
- The social partners of the university, for example, City children and youth tourist center;
- Other interested parties.

Methods of organization and coordination of these subjects:

- Understanding the concept and the pedagogical potential of sports and wellness tourism, acquaintance with the forms, methods and technologies;
- Concilia on discussing results of diagnostics of the students' body systems functional conditions;
- Development of guidelines for the organization of sports and wellness tourism;
- Master classes;
- Scientific and practical conferences;
- Methodological seminars;
- Counseling;
- Design and update of social network webpages of the University tourist club, etc.;
- Design and a constant update of methodological materials' databases on sports and wellness tourism activities, etc.

A 6-months period pedagogical experiment (January-July 2016) was carried out for the purpose of the experimental testing of the model among 20 men and 30 women aged 18-21 years at the Federal State Educational Establishment for Higher Education "Sochi State University" tourist club. Participants of the experiment attended training gym classes on a regular basis (2 times per week). They performed environmental trips (12 times), excursions (3), one-day hiking trips (3) and thematic classes on tourism technology in the natural environment (6) considering their level of physical and technical training for recreation.

To evaluate the efficiency of sports and wellness tourism classes the following methods were used: anthropometry (height, weight, body mass index – BMI), spirometry (vital capacity of



lungs, forced vital capacity of lungs, the amount of exhaled air per 1 second forced expiratory – the FEV<sub>1</sub>, peak expiratory flow – the PEF) cardio intervalography on the "Varicard" complex (heart rate – HR, integrated indicator of the functional state), functional tests (test PWC 170, the maximum oxygen consumption – MOC, somatic health status).

The participants of the experiment were tested according to the GTO complex standards, which included the following tests: leaning forward (cm); keeping the "Fish" static position (sec); running 100 meters (sec) for both men and women; running 3,000 meters, (min, sec) for men; running 2,000 meters (min, sec) for women; pulling-up from the high beam hanging position (number of times) for men; flexion and extension of arms from the back-leaning rest on the floor position (number of times) for women; straight legs-leaning forward from the standing position on a gymnastic bench (cm below the bench level); standing long jump (cm); 700-gram sport equipment throw (grenade) (meters) for men; body lifting up from the back-leaning rest position (number of times per 1 minute) for women. The results of the "hiking and the tourism skill check on a distance of 15 km" in both men and women, "5 km cross-country, without time limit" for men and "3 km cross-country, without time limit" for women tests were also taken into account for obtaining a GTO badge.

#### **4. Results**

Before the pedagogical experiment, students' fitness was slightly lower than the "Bronze badge" of the GTO complex standard in all the conducted tests and conformed to the average level of age standards for both men and women. Prior to the pedagogical experiment, the average result of the "Running 100 meters" test for men was worse than the "Bronze badge" of the GTO standard by 0,1 seconds; the "Running 3000 meters" test – by 8 seconds; the "Pulling-up from the high beam hanging position" test – by 0,7 times; the "Straight legs-leaning forward from the standing position on a gymnastic bench" test – by 1,9 cm; the "Standing long jump" test – by 3,6 cm; the "700-gram sport equipment throw (grenade)" test – by 1,3 meters (table 1).

For women, prior to the pedagogical experiment the average result in the "Running 100 meters" test was worse than the GTO complex standard "Bronze badge" by 0.2 seconds; the "Running 2,000 meters" test – by 3 seconds; the "arm flexing and extending from the back-leaning rest on the floor position" test – by 0,87 times; the "Straight legs-leaning forward from the standing position on a gymnastic bench" test – by 0,78 cm; the "Standing long jump" test – by 1,6 cm; the "Body lifting up from the back-leaning rest position" (number of times per 1 minute) test – by 1,3 times (table 1).

The improvement in all fitness evaluation characteristics of both men and women was observed after the experiment (table 1). At the same time a significant improvement ( $p < 0.05$ ) in men was recorded in "Running 3,000 meters", "Pulling-up from the high beam hanging position", "Straight legs-leaning forward from the standing position on a gymnastic bench", "Standing long jump" and "700-gram sport equipment throw (grenade)" tests. A significant improvement ( $p < 0.05$ ) in women was observed in "Running 2,000 meters", "Arm flexing and extending from the back-leaning rest on the floor position", "Straight legs-leaning forward from the standing position on a gymnastic bench", "Standing long jump" and "Body lifting up from the back-leaning rest position (number of times per 1 min)" tests. In "Running 100 meters" test the improvement in both men and women was not significant ( $p > 0.05$ ).

The obtained results asserted that the proposed methodology of the sports and wellness tourism helps students to improve their fitness, specifically increase the level of their endurance, flexibility, strength and speed abilities in both men and women.

The application of the proposed methodology for conducting classes on sports and wellness tourism contributed to the achievement of the GTO complex standards by youth. At the same time, the average men fitness level was below the GTO "Bronze badge" standard before the start. After the pedagogical experiment the average result in the "Running 100 meters" test in men conformed with the requirements of the "Silver badge" of this complex; the average result in the "Running 3,000 meters" test was 10 seconds worse than the "Silver badge" standard, but conformed with the "Bronze badge" requirements; the average result in the "Pulling-up from the high beam hanging position" test was only 0.1 times worse than the "Silver badge" standard, but conformed with the requirements of the "Bronze badge"; the average result in the "Straight legs-leaning forward from the standing position on a gymnastic bench" test exceeded the "Silver badge" standard; the average

result in the "Standing long jump" test exceeded the "Bronze badge" standard; the average result in the "700-gram sport equipment throw (grenade)" corresponded with the "Bronze badge" and was only 0.7 meters less than the "Silver badge" standard.

**Table 1.** Students' fitness level before and after the pedagogical experiment

Tests	Men		Women	
	Before	After	Before	After
Running 100 meters (sec)	15,20±0,53	14,80±0,46	17,7±0,69	17,3±0,69
Running 3 km (min, sec)	14,08±0,23	13,40±0,21*	-	-
Running 2 km (min, sec)	-	-	11,38±0,19	11,12±0,20*
Pulling-up from the high beam hanging position (times)	8,30±1,25	9,90±1,10*	-	-
Arm flexing and extending from the back-leaning rest on the floor position (times)	-	-	9,13±1,30	10,60±1,21*
Straight legs-leaning forward from the standing position on a gymnastic bench (below the bench level - cm)	4,10±1,73	7,10±1,20*	7,20±1,37	9,00±1,31*
Standing long jump (cm)	211,40±3,81	220,70±4,06*	168,40±4,12	177,70±4,35*
700-gram sport equipment throw (m)	31,70±1,94	34,30±1,91*	-	-
Body lifting up from the back-leaning rest position (times per 1 minute)	-	-	32,70±2,55	36,30±2,99*

Note \* – deviation of indicator differences before and after the pedagogical experiment ( $p < 0,05$ ).

Prior to the sports and wellness tourism practice, all the average women physical fitness characteristics were below the "Bronze badge" of the GTO complex standard. After the pedagogical experiment the average results in the "Running 100 meters" test for women exceeded the "Bronze badge" standard; the average result in the "Running 2,000 meters" test exceeded the "Silver badge"; the average result in the "Arm flexing and extending from the back-leaning rest on the floor position" test exceeded the "Bronze badge" standard; the average result in the "Straight legs-leaning forward from the standing position on a gymnastic bench" test exceeded the "Bronze badge" standard; the average result in the "Standing long jump" test exceeded the "Bronze badge" standard and was only 2,3 cm away from the "Silver badge" standard result; the average result in the "Body lifting up from the back-leaning rest position" test exceeded the "Bronze badge" standard.

Thus, the average the average men physical fitness characteristics complied with the GTO complex "Silver badge" standard after the application of the training techniques of the sports and wellness tourism in 33.3 % of tests ("Running 100 meters" and "Straight legs-leaning forward from the standing position on a gymnastic bench"), and 66,7 % of tests – with the GTO complex "Silver badge" standard ("Running 3000 meters", "Pulling-up from the high beam hanging position", "Standing long jump" and "700-gram sport equipment throw (grenade)"). In addition, at the end of the pedagogical experiment 2 of the experiment participants obtained the GTO complex "Golden badge", 4 – "Silver badge" and 6 – "Bronze badge". Whereas the "Bronze badge" of the GTO complex was obtained by 4 people, "Silver badge" – by 2, and the "Golden badge" was not obtained prior to the pedagogical experiment.

The average women fitness level began to comply with the GTO complex "Silver badge" standard after the application of the training techniques of the sports and wellness tourism in 16.7 % of tests ("Running 2,000 meters), and in 83,3 % of tests – with the "Bronze badge" standard



(“Running 100 meters”, “Straight legs-leaning forward from the standing position on a gymnastic bench”, “Arm flexing and extending from the back-leaning rest on the floor position”, “Standing long jump” and “Body lifting up from the back-leaning rest position”). In addition, at the end of the pedagogical experiment 2 participants obtained the GTO complex "Golden badge", 4 – "Silver badge" and 6 – the "Bronze badge". The "Bronze badge" was obtained by 4 of its participants, "Silver badge" – by 2, and the "Golden badge" was not obtained prior to the pedagogical experiment.

Prior to the pedagogical experiment the average health indicators of surveyed men and women in general were within the age normal values (Table 2). For example, the BMI index for men was  $24,00 \pm 3,98$  kg / m<sup>2</sup> at age rate of 20-25 kg / m<sup>2</sup>. For the surveyed women the figure was  $21,36 \pm 2,56$  kg / m<sup>2</sup> at age rate of 19-24 kg / m<sup>2</sup>

Vital lung capacity (VLC) for men was at  $5,20 \pm 0,52$  l, which at age normal value of 4.8 liters was slightly higher (by 0.4 l) than the normal values. The VLC indicator in women equaled  $3.74 \pm 0.57$  l, at the age rate of 3.6 liters was slightly higher (by 0.2 l) than the normal values. Forced vital lung capacity (FVLC) normally corresponds to 90-92% of vital lung capacity. FVLC indicators of men and women before the pedagogical experiment corresponded to the normal values which, in combination with the normal values of the amount of air exhaled per 1 second in forced expiratory (FEV 1) and peak expiratory flow (PEF) showed no difficulties in breathing.

**Table 2.** Students’ health indicators before and after the pedagogical experiment

Indicators		Men		Women	
		Before	After	Before	After
BMI, kg/m <sup>2</sup>		24,00±3,98	23,51±3,98	21,36±2,56	20,80±2,56
VLC, l		5,20±0,52	5,45±0,55*	3,74±0,57	3,95±0,53
FVLC, l		4,77±0,50	5,00±0,44	3,40±0,59	3,57±0,61
FEV 1, л		4,72±0,48	4,98±0,54	3,18±0,49	3,40±0,53
PEF, л/сек		9,31±1,27	9,38±1,03	5,56±0,95	5,63±0,88
Heart rate, beats/min		77,1±2,51	71,4±2,88*	83,0±3,30	75,4±3,04*
Integral functional state index (according to Varicard), %		70,1±3,48	79,4±3,50*	69,9±4,15	78,9±3,54*
Maximum oxygen consumption, ml/min/kg		41,8±4,1	47,2±4,0*	34,1±4,3	38,8±4,4*
Keeping the “Fish” static position, sec		65,2±6,9	74,4±8,2*	61,3±6,4	70,1±9,2*
Bourdon test	Efficiency, the number of characters	747±23,3	785±29,0*	717±21,0	758±24,3*
	Sustainability, the number of errors by one processed character	0,035±0,0011	0,014±0,0012*	0,035±0,0011	0,014±0,0012*

Note \* – deviation of indicator differences before and after the pedagogical experiment (p<0,05).

The functional state integral indicator of the participants of the experiment that was defined by the cardio intervalography was within normal limits and was amounted to  $70,1 \pm 3,42$  % in men and  $69,9 \pm 4,12$ % in women. However, in 16 % of cases there was a slight deviation of the values of this index from the standard, and in 8 % – a significant deviation, which was a reason for a medical consultation. In addition, single cases of tachycardia were recorded. The average heart rate level while resting in men was  $77,1 \pm 2,47$ , and in women –  $83,0 \pm 3,28$  beats / min prior to the pedagogical experiment.

The study of the maximum oxygen consumption prior to the pedagogical experiment didn’t reveal any deviations. So, male participants’ MOC level was  $41,8 \pm 4,1$  ml/min/kg, and female –  $34,1 \pm 4,3$  ml/min/kg, with a minimum limit value of this index – 42 for men and for women – 35 ml/min/kg.

During the “Keeping the “Fish” static position” test prior to the pedagogical experiment, the average male result was  $65,2 \pm 6,9$  seconds, and female –  $61,3 \pm 6,4$  seconds, indicating a low level of the back muscles development, and therefore a high probability of spinal disorders.

The Bourdon test results prior to the pedagogical experiment showed an average level of mental performance and sustainability focus in surveyed men and women (Table 2).

So, prior to the pedagogical experiment, both men and women had normal height and weight indicators, an average level of mental performance; had no respiratory system abnormalities. At the same time, a drop of the MOC level, the weakening of the back muscles and the increase of heart rate were observed. Moreover, cardiointervalography revealed individual deviations of the functional state of the cardiovascular system.

After the pedagogical experiment the experts pointed out an improvement of all health-related indicators, in both men and women (table 2), including a BMI decrease on the deviation level ( $p > 0,05$ ). In men, BMI had a decrease of  $0,49 \text{ kg/m}^2$  (from  $24,00 \pm 3,98$  to  $23,51 \pm 3,98 \text{ kg/m}^2$ ), and in women – of  $0,56 \text{ kg/m}^2$  (from  $21,36 \pm 2,56$  to  $20,80 \pm 2,56 \text{ kg/m}^2$ ). Perhaps the participants’ weight loss during the pedagogical experiment was due to the prolonged cyclical aerobic work, which is a characteristic of the sports and wellness tourism and is considered to be a positive fact.

A slight increase in VLC and all related indicators (FVLC, FEV 1, PEF) was revealed after the pedagogical experiment on the deviation level ( $p > 0,05$ ). In men VLC had an increase of  $0,25 \text{ l}$  (from  $5,20 \pm 0,52$  to  $5,45 \pm 0,55 \text{ l}$ ), and in women – of  $0,21 \text{ cm/kg}^2$  (from  $3,74 \pm 0,57 \text{ l}$  to  $3,95 \pm 0,53 \text{ l}$ ). Changes in the VLC-related indicators were relevant, appropriate and did not go beyond the normal range. Some increase in respiratory volumes was probably due to the strengthening of respiratory muscles during the active sports and wellness tourism exercises.

A normalization of the cardiovascular functions was observed after the pedagogical experiment. A significant decrease in heart rate was observed at rest, both in men and women ( $p < 0,05$ ). Resting heart rate in men during the sessions of sports and health tourism has decreased by  $5,7 \text{ beats / min}$  (from  $77,1 \pm 2,47$  to  $71,4 \pm 3,12 \text{ beats / min}$ ), and in women – by  $7,6 \text{ beats / min}$  (from  $83,0 \pm 3,28$  to  $75,4 \pm 3,02 \text{ beats / min}$ ).

Furthermore, there was a significant increase in MOC in both men and women ( $p < 0,05$ ). During the sessions of sports and wellness tourism MOC in men increased by  $5,4 \text{ ml / min / kg}$  (from  $41,8 \pm 4,1$  to  $47,2 \pm 4,0 \text{ ml / min / kg}$ ), and in women at  $4,7 \text{ ml / min / kg}$  (from  $34,1 \pm 4,3$  to  $38,8 \pm 4,4 \text{ ml / min / kg}$ ). Such a significant increase in MOC presumably was due to the weight loss of the examinees, as well as to the respiratory and cardiovascular systems reserve capacity increase due to exercises.

Wearing hiking backpacks and other physical exercises that were a part of the experiment significantly strengthened spine-supporting back muscles, as proved by the results of the “Keeping the “Fish” static position” test. A significant increase of this index was observed during the pedagogical experiment, both in men and women ( $p < 0,05$ ). The “keeping of the “Fish” static position” test time grew by  $9,2 \text{ seconds}$  (from  $65,2 \pm 6,9$  to  $74,4 \pm 8,2 \text{ seconds}$ ) in men, and by  $8,7 \text{ seconds}$  (from  $61,3 \pm 6,4$  to  $70,1 \pm 9,2 \text{ seconds}$ ) in women during the sports and wellness tourism practice.

The sports and wellness tourism activities affected and improved intellectual working capacity as well. There was a significant increase in results of the "Bourdon" test, both in men and women ( $p < 0,05$ ) in terms of efficiency and stability during the pedagogical experiment. The number of processed symbols in men increased by  $38 \text{ characters}$  (from  $747 \pm 23,4$  to  $785 \pm 30,0 \text{ characters}$ ), and in women - to  $41 \text{ characters}$  (from  $717 \pm 23,9$  to  $758 \pm 31,1 \text{ characters}$ ) during the sports and wellness tourism practice. The number of mistakes significantly decreased.

## **5. Conclusion:**

1. The results of the research show that sports and wellness tourism activities for the students of higher educational establishments increase their fitness level, develop physical qualities and improve functional body systems;

2. Dynamics of indicators of health and fitness during the pedagogical experiment had no distinct gender differences, proving the applicability of the proposed method for both men and women.

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