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INFLUENCE VARIABLE PART OF PHYSICAL TRAINING ON PHYSICAL DEVELOPMENT AND MODELS OF STUDENTS

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ВПЛИВ ВАРІАТИВНОЇ ЧАСТИНИ ЗАНЯТЬ ФІЗИЧНОЮЇ КУЛЬТУРОЮ НА ФІЗИЧНИЙ РОЗВИТОК СТУДЕНТІВ. Любомира СИНЧУК. *Львівський державний університет фізичної культури*

Анотація. У статті подано моделі керування інтенсивністю та обсягом фізичного навантаження, використання яких дає можливість розробити програми туристичних походів – варіативної частини фізичного виховання студентів. Мета роботи полягає в удосконаленні системи фізичного виховання на основі розробки та запровадження моделей фізичних активності студентів під час туристичних походів. Підтверджено, що застосування сучасних систем телекомунікацій у галузі фізичного виховання і спорту допоможе зробити процес навчання більш керованим і ефективним. Такий підхід дозволить запобігти фізичним перевантаженням чи шкоді здоров'ю. Ми встановили рівні інтенсивності, тривалість відпочинку, кількість повторень на основі розроблених моделей. Використання пристрою Polar RS800 G3 сприятиме досягненню обраної навчальної мети, контролюванню динаміки параметрів здоров'я і фізичної підготовленості студентів.

Ключові слова: дистанційне керування, моделі фізичних навантажень, здоров'я, телекомунікаційні технології, фізична підготовленість.

ВЛИЯНИЕ ВАРИАТИВНОЙ ЧАСТИ ЗАНЯТИЙ ФИЗИЧНОЙ КУЛЬТУРОЙ НА ФИЗИЧЕСКОЕ РАЗВИТИЕ СТУДЕНТОВ

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Аннотация. В статье представлены модели управления интенсивностью и объемом физической нагрузки, использование которых позволяет разработать программы туристических походов – вариативной части физического воспитания студентов. Цель работы состоит в совершенствовании системы физического воспитания на основе разработки и внедрения моделей физической активности студентов во время туристических походов. Подтверждено, что применение современных систем телекоммуникаций в сфере физиического воспитания и спорта поможет сделать процесс обучения более управляемым и эффективным. Такой подход позволит предотвратить физические перегрузкии или вред здоровью. Мы установили уровни интенсивности, продолжительность отдыха, количество повторений на основе разработанных моделей. Использование устройства Polar RS800 G3 способствовало достижению определенной учебной цели, контролю динамики параметров здоровья и физической подготовленности студентов.

Ключевые слова: дистанционное управление, модели физических нагрузок, здоровье, телекоммуникационные технологии, физическая подготовленность.

INFLUENCE VARIABLE PART OF PHYSICAL TRAINING ON PHYSICAL DEVELOPMENT AND MODELS OF STUDENTS

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Annotation. This article represents the models of control concerning physical activities at main intensive spheres, use of which gives the possibility to develop programs for tourist trips and various sports. Objective: to improve the system of physical education on the basis of established patterns of physical activity during tourist trips. Using of remote control system at physical education and sport will help to make the training process completely managed, with clear and measured exercising. It will prevent overload or damage to health. We can set the intensity level of activity, rest interval, the number and speed of repetitions due to the results of prepared models. The use of device Polar RS800 G3 will help us to choose training aims, follow them and see the progress during some period.

Keywords: remote control, model tourism campaigns, health, new technologies, physical preparedness.

Formulation of the problem. During the last couple of years there were help a lot of studies considering problems of physical education of students. However the attempts to add this innovations in the framework of the pedagogical process of institutions of higher education do not give sufficient results.

Ministry of education and science of Ukraine reduced the total weekly amount of hours for students of all subjects from 36 to 30. This, and also introduction of creative and modular system into educational process makes universities to reduce the amount of hours of non-core subjects, one of which is physical education. As the result, in most of universities the amount of physical education reduced to 2 hours per week for 2-3 years without any extra-curricular activities.

All this changes led to sharp decline of effectiveness of physical education classes, as the result of which problems like deterioration of health, development important physical attributes and physiological attributes appeared.

A lot of scientists think, that optional and independent physical exercises in different forms of physical education should compensate for the shortcomings of academic system.

Tourism is an effective form of physical education, which compensates those shortcomings. Its popularity is a promising direction for physical education and sport. Different types of tourism – hiking, water tourism, bicycle tourism, mountain tourism and others contribute to strengthening of health, temper and restore physical strength of younger generation, enforce healthy lifestyle.

Healthful value of tourism is determined by being in natural conditions, positive effects of different natural factors in connection with physical activity. All of that contributes to complete relaxation, strengthening of health and hardening of the body.

At the moment, the main trends of individualization of tourism are unreasonable. New developments are needed, which would should its essence.

Analysis of recent research and publications. Research of many different authors showed, that if motivation to do physical exercise is decreasing [4, 5, 6, 9], then level of physical preparedness and health of students decreases too (4, 11, 18, 20–22], which point at the necessity of comprehensive approach to addressing the problem, but foundation of this technique should provide for the principle of consciousness and activity at the early stages of learning. The level of moving skills, obtained in the middle school, determines the priority of physical education system [3], means of which not only positively affect the state of physical health, but also help to improve the components of moral and volitional preparedness, which indicates the presence of complex pedagogical influence on personality and implements a foundation for physical, mental and social well-being. According to V. Alabina [1] and H. Tumanyan [15], a prerequisite for effective management system of physical training on the principle of full and harmonious development is the selection of the correct load, allowing consistent and appropriate use of things, methods and forms without compromising health. Given the small amounts of time allocated for physical education students in universities, constructing the appropriate strategy sessions should provide a high density and appropriateness of the chosen methodological approaches. In addition, the implementation of the functional capacity of the student should be based on scientifically based physical loads, which implies not only teaching the basics of physical abilities, but also the value of physical activity of various kinds of age-appropriate contingent. According to S. Kozibrodskyy [7] M. Oleynyk [12] and O. Fanyhina [16], the lack of scientifically-proofed plan for the introduction of effects on the body can not only reduce the process of improving the physical properties, but also negatively impact its development.

Given that the efficiency of improvement of physical properties with the natural development determines the reliability of the organism as a biological system, and creating a solid foundation for all-round development of the individual. In situation like, it is a regular result of studies [2, 7, 11, 16, 17, 19, 22], on the one hand indicate a low level of physical fitness and health representatives today of students, on the other - ensure the relevance of the chosen problem.

Objective: to improve the system of physical education on the basis of established patterns of physical activity during tourist trips.

Relation to scientific programs, plans, themes. Scope of work corresponds to the consolidated plan of research in the field of physical culture and sports in 2011–2015 by 3.1 theme «Improving software and normative foundations of physical education in schools» (№ state registration 0111U001733).

Objectives of the study:

1. Develop and analyze models of physical activity during tourist trips.
2. To analyze the data and possibility of using remote control to improve the physical abilities of students.

Methods of studding: theoretical analysis of literary and scientific sources, monitoring the heart rate Polar RS800G3, mathematical and statistical data analysis.

Tourism contribute to the successful development of such physical qualities and abilities as: endurance, strength, agility, courage, perseverance, ability to navigate the terrain. Trips require from tourist a lot of training, improvement of general and special physical training and tourism skills.

Health aspect of tourism is the positive impact on the human organism of nature's factors combined with tonic muscular activity. The intensity of muscle activity is determined be the state of health and physical fitness campaign website, which makes the choice of vehicle, tempo, duration, etc. The most popular types of active tourism for the recovery are hiking, skiing, water, hiking and biking trips, walks and excursions, and participants tend to account for the total (moderate to substantial) exercise. It strengthens and trains the human body, achieves significant health effects: developing and strengthening the cardiovascular and respiratory systems, improves the digestive process, increases metabolism, and strengthens the musculoskeletal system. Regulated by walking, skiing, rowing and sailing on boats, bikes in all weather conditions, terrain, jumping, carrying cargo-develop strength, endurance, agility, reaction speed, etc.

The main form of tourism work is to organize a training in the tourism section and tourist clubs. Each section or club unites all people who enjoy tourism or just wants to join it.

So in college Galician Institute's college was created a section and all tourism organization's work is built on a separate plan, keeps records of all ongoing work on tourism, checks the appropriateness and rationality of the use of sports equipment, gear and equipment.

Students from Galician College in Ternopil attended the tourism campaign. Students were divided into three groups: the experimental group E -1 consisted of 16 students, in group E - 2 - 18 students, a control group K - 16 students. Physical fitness of all groups was defined by educational testing basic physical abilities on national tests and standards for evaluation of physical fitness [1]. At the beginning of the campaign health and physical development of the participants in the control group can be estimated as the average of 87,5% (80%) and above average 12,5% (20%).

A control model for physical activity of students during tourist trips was created on the basis of the results from the travelled routes. Monitoring was carried out with the aid of Polar RS800G3, which distributes the load in the zones of intensity, measures the pulse with high accuracy, determines heart rate, calculates speed and distance measuring height, has the ability to install the upper / lower limit pulse interval training program and more. Using the remote control method makes it possible to better define the complexity of the route and reduce the risk of danger to life, health or the environment and so on. That is, in each case it must provide the amount of load and intensity, which could improve body strength. Personal target heart rate zone Polar OwnZone defines the limits of heart rate during exercise. Our physical condition varies depending on time of day and days, for example, when the body is tired, in a state of stress, has not received sufficient recovery after the last training, etc. Polar can obtain this information based on heart rate and offer the necessary zone intensity for the given time.

During the tourism campaign, the wrist monitor displayed various parameters - it helped us to monitor the implementation of route plan and reach our goals. In order to remain within the selected area, there is a beep that warns you about leaving it. Polar ProTrainer 5 software can pass on the wrist monitor up to 21 training sessions (using infrared IrDA), and then, after training, upload received data to

your computer for analysis. Advantage of Polar ProTrainer 5 – is that we track their progress over time and use the entire history of the route traversed as a tool for future planning and imputation objectives for the next tourist trek. After evaluating previous treks, we can modify the new ones.

Results and discussion. Physical training is aimed at developing students' physical qualities necessary to ensure the high levels of physical development and athletic training. That's why the use of remote control method was effective in campaigns. The intensity was regulated by Polar RS800 G3 which automatically identifies the main areas of intensity of physical activity. During physical education and training intensity is determined by the heart rate, and exercises to develop strength, speed, coordination – the number of repetitions, which is not always possible to correctly dose physical load for different age groups, taking into account the individual characteristics of those involved. In tourism campaign PolarRS800G3 allowed easily select and monitor the intensity of stress based on sport areas, which are divided according to the percentage of maximum heart rate (a very light (50–60% HRmax), light (60–70% HRmax), medium (70–80 % HRmax), complex (80–90% HRmax) and maximum (90–100% HRmax)). This allowed us to establish the correct intensity during campaigns.

We formed 3 models of physical load. To groups were offered three different routes. The control group was given the rout number 1:

Osmoloda village – spine Matahiv – mount Vusoka (1803 m) – mount Ihrovets (1804 m) – Borevka pass – mount Lopushna (1772 m) – mount Velukuy Syv mount Jules (1836 m) – mount Mala Syvulya (1818 m) – meadow Ruschyna – meadow Schafer – Salatruchil river – Salatruk river – Bystrica village.

The experimental group E-1 was given the route number 2:

Yaremche – per. Pryslop – mount Dovbushanka (1754 m) – Bystrica village – per. Legion – mount Bratkivska (1788 m) – per. Okola – mount Tataruka (1711 m) – mount Troyaska – mount Stig (1707 m) – mount Blyznytsia (1882 m) – mount Stara – Kvasy village – mount Munchel (1998 m) – Petros (2020 m) – Goverla (2061 m) – Brebeneskul (2032 m) – Pip Ivan (1936 m) – the town Werchowyna.

The experimental group E-2 was given the route number 3:

Volova village – Pol. Hermanivka – mount Rotylo (1483 m) – Pol. Rotylo – Pol. Cram – mount Hrehit (1472 m) – Pol. Vesnarka (overnight) – mount Haboryanska Hyha (1444 m) – mount Bila Kobyla (1477 m) – Velykyi Pryslop – Verkhovina

For the study, we took pieces of each group's rout. They are roughly similar, the pictures show the overcoming of hilly terrain-climbing to the mountain. The control group compared with the other two, was moving all day long faster, and with less rest intervals (Fig. 1).

Students from the group E-1, in addition to the required physical education classes for the general program (4 hours), visited a week sports section twice a week (basketball, volleyball, soccer, tennis). They were moving at a moderate speed for half a day and with more time to rest (Fig. 2).

The model designed for students of group E-2, which in addition to physical education classes were engaged in self-study and exercise 15–20 minutes daily. Group has gone the route with identical loads as group E-1 (Fig. 3).

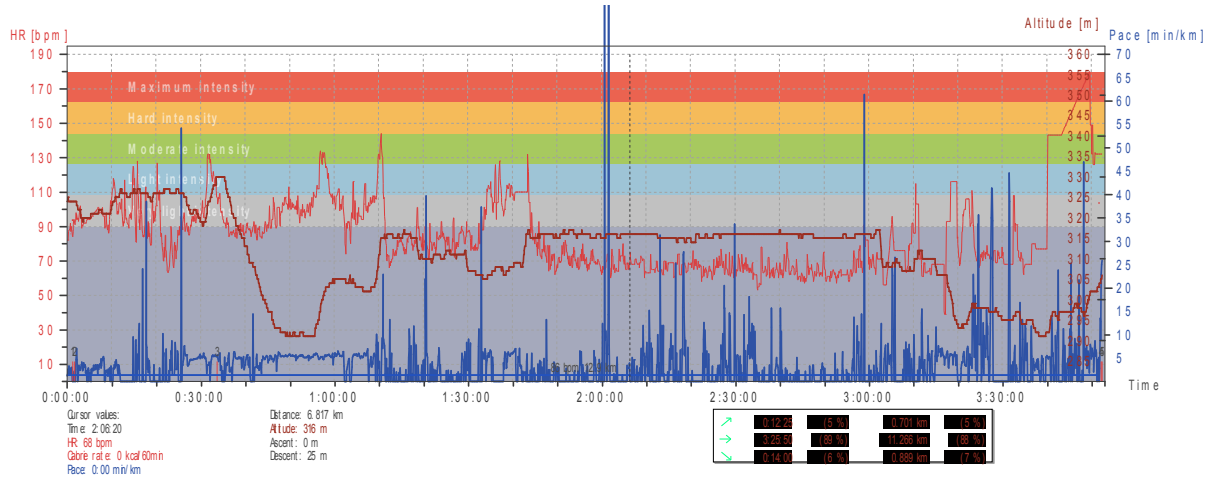
Analyzing the data tracks, we introduced the performance of all groups in this table.

Analyzing the data collected during the campaign, according to various indicators of stress at every minute of the campaign. Choosing a route point we see how far we are, speed, when we have reached this point, the heart rate, intensity zone, the height of ascent and descent, temperature, calories burned. During the analysis of the whole route, we also determined the recovery of the body, maximum, average and minimum number of heart beats, speed, elevation and more. The results confirm a statistically significant difference indices of physical load during tourist trips to student groups - groups of K on E-1 and E-2. Differences ($P < 0.05$) were found on indicators of heart rate, speed and altitude. However, indicators of physical fitness and readiness of groups E-1 and E-2 are generally similar.

Thus, the method of remote control in the tourism campaign has been effective through the use of the device Polar RS800 G3, we avoided overloading of the students' bodies.

Person	11 555	Date	12.10.2013	Heart rate	150 / 189		
Exercise	Free	Time	8:21:06	Pace	20:41 / 1:07		
Sport	Running	Duration	3:21:50.0				
		Distance	4.8 km	Running Index	26		
Note				Ascent	1660 (-6.4%)		
				Selection	0:00:00 - 3:21:50 (3:21:50.0)		

Fig. 1. **Control group's overcoming of a part of their rout using Polar RS800G3**



Person	11 555	Date	01.10.2013	Heart rate	86 / 180		
Exercise	Free	Time	9:07:27	Pace	11:19 / 0:22		
Sport	Running	Duration	3:52:23.8				
		Distance	12.0 km				
Note				Ascent	75 (-2.5%)		
				Selection	0:00:00 - 3:52:20 (3:52:20.0)		

Fig. 2. **E-1 group's overcoming of a part of their rout using Polar RS800G3**

The survey results indicate that the improvement in moving performance of student youth is only

possible with the right choice of rational modes of moving activity. Our method of constructing models of moving activity based tourism campaign and physical condition of students can be used in the practice of physical education departments at universities.

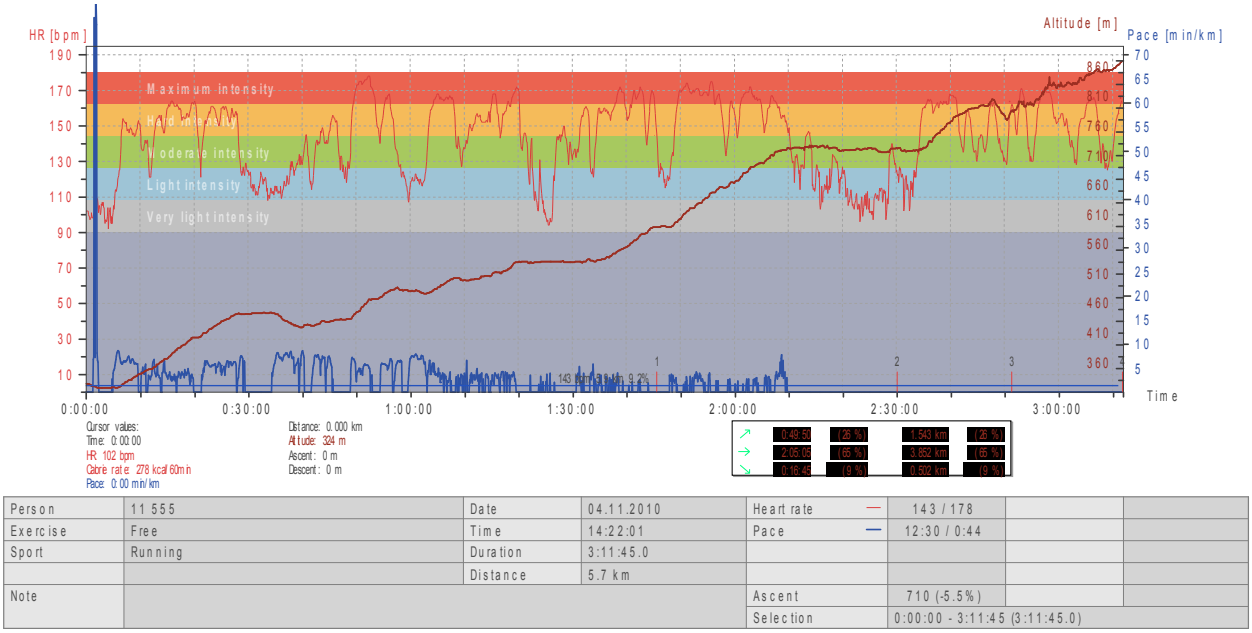


Fig. 3. **E-2 group's overcoming of a part of their rout using Polar RS800G3**

The prospect of further research opens scientists and teachers wide range of activities in the search for new forms and methods of learning, the educational process, that is, with a minimum number of weekly sessions to get the maximum effect.

Table 1

Indicators of physical activity in the tourism campaign

I	II	III	IV	V
Indicators	Units of measure	K	E-1	E-2
Minimum heart rate	beats	72	69	92
Average heart rate	beats	150	140	143
Maximum heart rate	beats	189	180	178
Minimum speed	min/km	40:57	50:55	48:51
Average speed	min/km	20:41	11:19	12:30
Maximum speed	min/km	1:07	0:22	0:44
Minimum height	m	322	291	317
Average height	m	786	311	584
Maximum height	m	1076	630	868

Conclusions:

1. The models for the three groups of students by their physical loads during tourist trips were developed. Based on the results - K significantly has better results than in the E-1 and E-2.

2. Established the effectiveness of using the device Polar RS800 G3, which helps make the tourist route more controllable.

3. The analyzed data show that the differences between the parameters being studied is statistically significant (P> 0.05), as a method of remote control can be used for improving the physical qualities of the students. Use the device Polar RS800 G3 will enable development of programs to improve the physical fitness of students, for athletes – to maintain or increase the current level of physical ability for fans - help improve the cardiovascular system, general endurance, power capacity, flexibility and more.

Bibliography

1. *Alabin V. H.* Long-standing training of young sportsmen : teaching aid / V. H. Alabin, A. V. Alabin, V. P.Bizin. – Kh. : Osnova, 1993. – P. 243.

2. *Bondarchuk N. Y.* differentiated approach to physical training of students from different various biochemical areas of Transcarpathia: Abstract. Thesis. for obtaining sciences. degree candidate. Science of Phys. Closed. and sports: spec 24.00.02 "Physical culture, physical education of different groups"/ N. Y. Bondarchuk. – L., 2006 – P. 24.

3. *Volkov V. L.* Basic theory and techniques of physical training of students: teaching aid for students. high. teach. Establishments of physical education and Sport / V. L. Volkov. – K. : Education of Ukraine. – M., 2008. – P. 256.

4. *Hryban H. P.* Analysis of students' health living in bad environmental conditions / H. P. Hryban // Theory and practice of physical education. – 2004. – № 3. – P 145.

5. *Drachuk A.* Socio-psychological portrait of students in the years of Ukraine as an independent state / A. Drachuk // Theory and Methods of Physical Education and Sport. – 2005. – № 4 – P. 84–86.

6. Experimental substantiation of harm of smoking among students / S. I. Kovalchuk, V. V. Kolesnikov, H. A. Holubtsova L. P. Havrilova // Mat. scientific forum of public movement «Healthy World». – 1998. – P.103.

7. *Kozibrotskyy S. P.* Software and normative foundations of physical education of students (historical and methodological analysis) Abstract. diss. for obtaining scientific degree of candidate of physical education and sports: spec. 24.00.02 «Physical culture, physical education of different groups» / S. P. Kozibrotskyy – L., 2002. – P. 16.

8. *Kolbanov V.* Social determinants of health and lifestyle // Health: creature, diagnostics and health promotion strategy: materials of international scientific conference. – Radom, 2001. – P. 25–30.

9. *Kuznetsova O. V.* Effect of physical training on the health of students of economic specialties during their training in universities // Actual problems of the movement of «Sport for All» in the context of European integration of Ukraine: Math. scientific prakt.konf.24-June 26. / O. V. Kuznetsova. – T., 2004. – P. 301.

10. *Leonov O. Z.* Basic components of physical education in higher education institutions abroad / O. Z. Leonov, V. P. Dragomanov // Scientific Journal NEA: Collected Scientific Works. – K., 2005. – Series 15, №. 1. – P. 101–108.

11. *Loshytska T. I.* Peculiarities of physical development of conscript young people // Pedagogy, psychology and health and educational problems of physical education and sport: Collected Scientific Works / Ed. S. S. Ermakov. – H. : KSADA (KhAII). – № 6. – 2005. – P. 34–40.

12. *Oleinik N. A.* Theoretical and methodological foundations of of managing the physical culture and sports in Ukraine: Author. dis. upon received. scientific. Art. Candidate. Science in nat. Playback. and sports specials. 24.00.02. «Physical culture, physical education different groups» / N. Oleinik – K., 2000. – P. 20.

13. *Nabatnikova Y.* Basics of preparation of young athletes / M. Y. Nabatnikova. – M. : Physical Culture and Sports, 1982. – P. 280.

14. *Platonov V. N.* Preserving and promoting the health of healthy people – a priority of modern healthcare / V. N. Platonov // Sports Medicine. – 2006. – № 2. – P. 3–14.

15. *Tumanyan H. S.* Combat sport: the selection and planning / H.S.Tumanyan. – M. : Physical Culture and Sports, 1984. – P. 144.

16. *Fanyhina O. Y.* Correction of physical fitness of university students during lessons wellness swimming abstract types of physical education and sport: spec. 24.00.02 "Physical culture, physical education of different groups / O.Y. Fanyhina – K., 2005. – 19 p.

17. *Shinshina S. I.* Health and physical fitness of freshmen / S. I. Shinshina, H. V. Fedorov // Health and Education: Problems and Prospects: Proceedings of the Third All-Ukrainian scientific-practical conference. – Donetsk : Donetsk National University, 2004. – P. 319–320.

18. *Yukhimenko S. M.* Analysis of adaptive capacity of student youth // Pedagogy, psychology and health and educational problems of physical education and sport: a collection of research papers / edited by S. S. Ermakov. – H. : KSADA (KhAII), 2007. – № 4. – P. 145–147.

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