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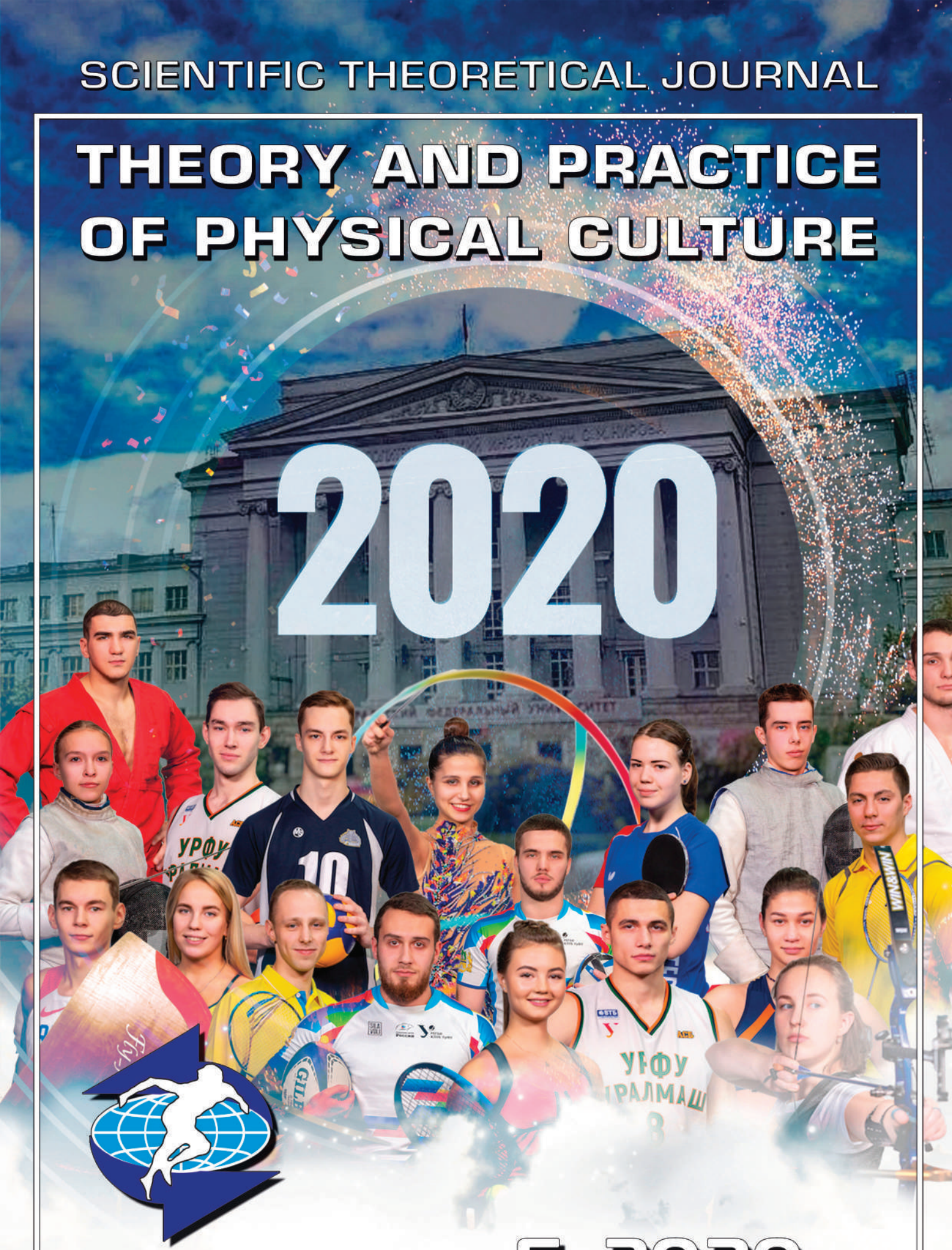

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Contents

PHYSICAL EDUCATION AND SPORTS DEPARTMENT OF IRKUTSK NATIONAL RESEARCH TECHNICAL UNIVERSITY: 70TH ANNIVERSARY PROGRESS HISTORY ANALYSIS

UDC 976(094)

Dr. Sc. Tech., Associate Professor **M.V. Kornyakov**[1]
PhD, Professor **A.A. Akhmatgatin**[1]
PhD, Professor **S.A. Galtsev**[1]
[1]Irkutsk National Research Technical University, Irkutsk

Corresponding author:
ahmatgatinaa@istu.ed

Annotation

Objective of the study was to analyze the process of establishment and development of the Physical Education Department of Irkutsk National Research Technical University, as well as elaborate the ways to improve its work. The study was conducted using the methods of scientific literature analysis and induction. The article presents historical materials on the establishment and development of the Physical Education Department of Irkutsk National Research Technical University, as well as the directions of improvement of its activity based on the relevant provisions of the system approach. It also covers the peculiarities of activity of the Physical Education Department in the process of its development, discloses the information about the people who have made an invaluable contribution to the improvement of its work. During the period of operation of the Physical Education Department, the methodology of organization of classes, lesson plans, training aids and scientific knowledge base for physical education and sports activities have been improved significantly. Currently, the Department staff publish 1-3 monographs and 25-30 articles annually in the journals approved by Web of Science, Scopus, and those from the list of the State Commission for Academic Degrees and Titles. At the same time, effective organization of work of the Department as a unified system, that includes coordinated interaction of its main units aimed to obtain such a result that would ensure achievement of activity goals, seems to be the main condition for physical education process improvement.

Keywords: *Physical Education Department, establishment, practical study, theoretical study, systemic approach, physical health.*

Background. The Irkutsk National Research Technical University's Physical Education and Sports Department is one of the oldest and leading establishments at the university with its 70-year theoretical and practical educational, research and tutorial experience.

Objective of the study was to analyze the Irkutsk National Research Technical University's Physical Education and Sports Department 70-year progress history.

Methods and structure of the study. We used for the purposes of the study analyses of the reference literature and archive materials to summarize the Physical Education and Sports Department progress history with a special priority to the institutional, operational and management issues, plus an induction method to outline the further progress avenues for the Physical Education and Sports Department service based on the past progress analysis.

Results and discussion. The Physical Education and Sports Department was established as an independent unit at the university back in 1949 by the sports group being severed from the Military Training Department of the Irkutsk Mining and Metallurgical Institute. The new department was headed by V.G. Kind, graduate of the P.F. Lesgaft Leningrad Physical Education Institute who managed the new Physical Education and Sports Department for 29 years to form the top-professional faculty for the educational, theoretical and practical trainings, sports and mass physical education movement facilitation service.

In the 1950-60s the Physical Education and Sports Department faculty was reinforced by a group of sports professionals including A.G. Turchaninov, R.L. Boyarchuk, T.M. Tueusheva, I.P. Sedelnikov, A.N. Litvintsev, R.G. Vadutov, E.I. Mikhalev, V.I. Kirillov, B.I. Kalashnikov, Z.S. Maksimova, V.P. Shulikov, R.G. Mratova, P.M. Tochilov, P.I. Ineshin, V.I. Silyava et al. who formed its core for many years to come. Most popular at that time were track and field sports, artistic gymnastics, skiing, football, swimming, gymnastics and weightlifting. The Physical Education and Sports Department students were successful in

qualifying for the sports classes and in the national academic competitions in classical wrestling, football, boxing, speed skating, cycling and rowing events. Since the Institute campus was relocated to the left bank of the Angara River, the Physical Education and Sports Department got an access to the best municipal sports center and gyms for the theoretical and practical trainings and competitions in many sports disciplines. It was at that time that the Physical Education and Sports Department formed excellent boxing, wrestling and weightlifting groups.

The Institute immediately launched a stadium construction project. The faculty was reinforced at that time by talented graduates of the national sports universities including B.D. Malykh, L.Y. Mikhaleva, L.A. Salova, L.K. Fedorenkova, N.M. Oshcherina, V.G. Kuriga, L.S. Cherepennikov, L.N. Shilnikov, V.G. Kozhemyakin, Y.P. Polyansky et al. who gave a new impetus to the academic artistic gymnastics, skiing and track and field sports. Reforms in the theoretical and practical trainings laid a basis for the competitive progress of the academic teams, with particular successes made by the biathlon team coached by V.I. Kirillova; classical wrestling team coached by R.G. Vadutov, B.I. Kalashnikov and E.I. Mikhalev; and the track and field sports team coached by V.S. Osipova.

In the period of 1979 to 2001 the Physical Education and Sports Department was headed by Associate Professor R.G. Vadutov with his 40-year practical experience in the academic physical education and sport service management domain. A special progress in that period was made by the academic women's volleyball team coached by K.K. Markova – that had been successful many times in the Russian Burevestnik Cups and the Municipal and Oblast championships. The other academic teams had been many times successful in the Oblast Student Games in 18 sports disciplines.

Since 2001 the Physical Education and Sports Department was headed by E.G. Shporin who paid a special attention to the physical education and sport service assets building and Physical Education and Sports Department research resource reinforcement initiatives, and made a special contribution to the university stadium rehabilitation project to host the national Olympic and Paralympic track and field sports teams in 2008. He encouraged the scientific progress of the Physical Education and Sports Department faculty, with many academic team members being titled and certified at that time. Thus in 2004 to 2014 the share of certified personnel in the faculty grew up from 2.4% to 23% including the shares of doctors and professors. Since 2006, the Physical Education and Sports Department has run postgraduate research in 13.00.04 discipline.

In 2016 the Physical Education and Sports Department was headed by Associate Professor A.A. Akhmatgatin who made a special contribution to the Physical Education and Sports Department human resource building initiatives. As a result, presently the Physical Education and Sports Department faculty includes 30 top-professional educators with 3 Doctors of Science, 5 PhDs, 4 Professors and 2 Associate Professors who every year publish 1–3 monographs and 25–30 study reports in the journals listed in the Web of Science, Scopus and Higher Attestation Commission Catalogue.

Presently the University holds 34 sports facilities including a stadium with a fifth-generation artificial turf, modern field sports sectors and 8 tracks; a team sports center for basketball and volleyball trainings and competitions, with a unique top-difficulty large-size climbing wall; plus 12 special sports gyms and 14 outdoor sports grounds. On November 30, 2019, the University met the XXIX World Winter Universiade flame on its way via Irkutsk to Krasnoyarsk, a host city for the event.

The Physical Education and Sports Department runs a Physical Health Monitoring Laboratory headed by Professor V.Y. Lebedinsky, and a University Sport Club that provides 33 group physical education and sport services to more than 1200 students. The physical education and sport service is provided on a health-group, gender-, sport-qualification- and interest-specific basis, with the range of optional physical education and sport sports including traditional physical training, athletic gymnastics, boxing, hand-to-hand fight, aerobics, health physical education and adaptive physical education groups.

The Physical Education and Sports Department faculty takes persistent efforts to further improve the physical education and sport service quality on a systemic basis, with a special priority to the goal-setting aspect, with a goal viewed as the image of the desired future or a progress model that needs to be achieved [5], with the relevant interim and final deliverables [1]. To ensure an effective and systemic performance in any field, it is important to secure the system-specific self-regulation progress in the following two forms: (1) feedback-driven progress to control the system performance versus the process goals and the interim/ final reference points/ deliverables; and (2) more complex self-regulation and progress longer-term mechanisms largely independent of any predetermined system of standards and performance criteria [3].

It should be emphasized, however, that one of the main goals of the Physical Education and Sports Department service is to secure the high physical health standards for the students, with the physical education and sport service being designed to improve the individual and collective health resource as a basis for professional progress [2]. In this context, the Physical Education and Sports Department service algorithm may be presented as follows:

1. Set the physical education and sport service goals with the expected deliverables as a systemic basis for the service;
2. Develop a set of the progress-rating criteria and the interim (stage-specific) performance and progress models with the reference points;
3. Develop and implement an education technology to attain the above goals; and
4. Rate actual progress versus the planned deliverables/ reference points and the performance/ progress models.

Based on the above provisions, the Physical Education and Sports Department Education Methodology Commission will set a specific physical education and sport service goal – that is generally to secure the physical health standard for the students for their professional progress,

with the relevant values system, motivations and personality qualities to secure their healthy lifestyles for the whole lifetimes.

One of the most important and challenging physical education and sport service elements are the academic progress test systems [7], with the progress tests forming a frame for self-regulated performance model and students' motivations [6]. Based on the students' physical health rating tests and academic physical education and sport service progress analysis, the Physical Education and Sports Department faculty, Physical Health Monitoring Laboratory and Physical Education and Sports Department Education Methodology Commission will develop a set of the progress rating criteria classified by the academic Health Groups I, II and III on a gender- and year-specific basis.

The Physical Education and Sports Department Education Methodology Commission will offer, based on the group progress goals and using the relevant progress rating criteria, specific physical education and sport technologies to attain the specific goals; and the Physical Education and Sports Department faculty will implement these technologies in the standard academic physical education and sport service and optional practical physical education and sport disciplines, with the students' progress tested every semester. The Physical Health Monitoring Laboratory will analyze the academic progress tests data versus the yearly progress models using the sets of the progress-rating criteria. The resultant progress test data will be analyzed by the Physical Education and Sports Department Education Methodology Commission versus the target physical education and sport competences and standards to offer further education process improvement solutions on a physical education-and-sport-discipline-specific basis.

Conclusion. On the whole, the modern Physical Education and Sports Department service is designed to secure its operation on a self-regulation basis in the following two forms: (1) feedback-driven progress, with the system short-term performance controlled and managed versus the educational process goals, interim/ final reference points/ deliverables and practical individual progresses. This form is applicable in the direct educational models; and (2) more complex self-regulation and progress mechanisms that secure the educational process being adapted to the variable process conditions, with the relevant progress rating sets of criteria versus the service models and contents. This process regulation form is applied on a longer-term (5 plus year) Physical Education and Sports Department service planning basis to effectively customize the service standards to variations in the educational conditions and training-discipline- and area-specific standards [3].

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MODERN ACADEMIC PHYSICAL EDUCATION AND HEALTHY LIFESTYLE CULTIVATION TECHNOLOGIES

UDC 796.4

PhD, Associate Professor **O.I. Kuzmina**[1]
Dr. Med., Professor **V.Y. Lebedinsky**[1, 2]
PhD **O.A. Shvachun**[3]
[1]Irkutsk National Research Technical University, Irkutsk
[2]Irkutsk State University, Irkutsk
[3]Russian State University of Justice, Voronezh

Corresponding author:
ariana.ru@mail.ru

Annotation

Objective of the study was to substantiate modern pedagogical technologies and new types of motor activity in application to students' training process aimed to involve them in regular academic physical education classes and form a healthy lifestyle.
Methods and structure of the study. The study was carried out at the premises of Irkutsk National Research Technical University from 2007 through 2019. The first stage (2007-2008) was focused on the formation and further improvement of the university legal framework concerning the problems of preservation and promotion of students' health. The second stage (2009) was devoted to the development of a common methodology in the field of protection and assessment of health of the educational process subjects. The third stage (2010-2011) consisted in the development of the structure and content of a unified health monitoring system for students – "Health Passport". The fourth stage (2012-2019) was devoted to the systematization and theoretical analysis of study findings, development of practical recommendations and introduction of new pedagogical technologies and new types of students' motor activity into the university's activity.
Results and discussion. The studies undertaken during the past decade indicate a steadily low level of health in students entering the 1st year of study. In 2007, more than half of the first-year INRTU students were attributed to the main and preparatory health groups (52.5% and 16.3%, respectively), while the special health group was made of the smallest (over all years of study) number of students (23.3%). Comparing the data obtained in 2008 and 2019, it was found that in the endurance test (1000 m run), the number of female students with the "low" and "below average" rates (under the standards of physical development and physical fitness of students) decreased by 16.9%. At the same time, there was an increase in their number in terms of the "average" (by 7.9%) and "above average" (6.9%) rates. In the standing long jump test, the number of female students with the "low" rates reduced by 11.6% through expanding the "average" (2.9%) and "above average" (16.6%) clusters. Some significant shifts were observed in the push-up test: the number of female students with the "low" and "below average" rates decreased by 35.7%, while the number of those with the "average" (by 16.5%), "above average" (by 21.3%) and "high" (by 72.2%) rates increased. A similar situation was observed in terms of the physical development rates.
Conclusion. The use of modern pedagogical technologies and new types of motor activity in the university's activity helps attract students to regular academic physical education classes and contributes to the formation of their value attitude to a healthy lifestyle.

Keywords: *health protection, students, physical education technologies, healthy lifestyle, physical development, physical fitness.*

Background. The ongoing global digitalization of the modern labor markets driven by the socio–economic and geopolitical transformations the world over urges the national education communities take special efforts to improve the professional specialist training systems with a special priority to the graduates' health standards which are ranked high on the list of priorities of the national educational policies. The social requirements to the professional and personality qualities of the human resource generated by the academic specialist training system make a special emphasis on its physical education and health values and priorities and healthy lifestyle.

The burden on national expectations on the new generation that is expected to lead the national economic and technological progress implies the future specialists being highly determined and successful in the studies and professional careers, proficient in the data flow processing and control and competent in the health protection and improvement issues. It should be noted, however, that many university students are still disinterested in the traditional forms of physical education, physically inactive and largely unmotivated for habitual physical education and healthy lifestyles. This is the reason why the academic education community persistently looks for new physical education

models and tools to effectively encourage and mobilize students for the academic physical education and healthy lifestyle cultivation initiatives and motivate them, with a special priority to the student–educator cooperation improvement aspects [1].

Objective of the study was to theoretically substantiate, design and test benefits of new academic physical education and healthy lifestyle cultivation technologies for habitual physical activity.

Methods and structure of the study. The study was run at Irkutsk National Research Technical University (INRTU) in 2007–2019. The first stage (2007–2008) of the study was designed to form and excel the academic legal and regulatory framework for the health protection and improvement initiatives. At the second stage (2009) of the study, we developed a comprehensive academic healthy lifestyle encouraging and health rating method. The third stage (2010–2011) of the study included a Health Passport development and implementation program with a universal health test and monitoring toolkit. And at the fourth (2012–2019) stage of the study, we systematized and theoretically analyzed the study findings to produce practical recommendations on how the new academic physical education and healthy lifestyle cultivation technologies should be implemented and promoted in the national academic educational system.

Since 2007, the IRNITU's health programs were headed by the Physical Progress Monitoring Research Laboratory (PPMRL) and Health Technologies Center that keeps an academic health database with are more than 50,000 individual health test records of the basic and preparatory health groups and special health groups. The PPMRL and Health Technologies Centers have developed, based on the relevant study reports [4–6] and own research data, the following basic guidelines and practical recommendations for the new physical education and healthy lifestyle cultivation technologies.

1. For the health benefits of the academic physical education service being realized, the students should be aware of its great resource with the relevant intellectual, technological, mobilization and activation aspects, motivations, values and priorities. The traditional priority to only the physical activation aspect in the physical education curriculum is no more effective enough since the physical education service needs to be reformed to make a special emphasis on the intellectual and socio–psychological progress aspects to fully satisfy the natural physical activation needs of the students. Therefore, practical benefits of the academic physical education service should be prioritized in the academic studies and supported by modern physical education models and tools geared to cultivate healthy lifestyle in the student communities.

2. For the students being effectively motivated for the new physical education and healthy lifestyle cultivation service, a special emphasis in the physical education service shall be made on the health aspects and individual health agendas, with the trainings being customized for the actual health groups, physical development and physical fitness test rates, individual anthropometric characteristics, functionalities and psychological needs and specifics.

3. The integrated health–centered physical education service model implies the trainees' health being rated in the academic process in many aspects including the general health, physical fitness, physical development and socio–economic wellbeing. The health progress test and monitoring physical education components shall give a high priority to the modern digital automated health test systems to facilitate the physical education service customizing and management solutions. Thus the INRTU's Health Passport Program [3] makes it possible to: profile and analyze the individual progress on a comprehensive basis with every internal and external factor of influence on health being taken into account; develop regional physical fitness and physical development standards (for the Baikal region); analyze the exposures to the key health risk factors in the youth communities; and take timely and adequate disease–prevention initiatives. The Health Passport Program includes the following modules: Background Data; Risk Factors of the Key Diseases with Social Implications; Social Status; General Health; Physical Development; Physical Fitness; and Health Protection and Healthy Lifestyle Cultivation Technologies: Basics and Benefits. The HP Program provides the means to test and analyze health on a comprehensive individualized basis and generate analytical health reports for any sample.

4. The academic health physical education toolkit formation projects will be facilitated by the Health Technologies Centers coordinating the efforts to implement modern health technologies in the physical education service and academic environments to secure progress in the physical and mental health standards. The Health Technologies Centers will be responsible for the health education, medical and disease prevention service plus the relevant healthy and sporting lifestyle promotion campaigns supported by an extensive university health database and analyses.

5. We recommend to complement the efforts to motivate and lure students in the habitual physical practices based on the academic physical education service by new physical activation forms and mass sporting events and movements of special appeal for the youth communities including flash mobs, dance sport festivals supported by the GTO Complex elements, intellectual competitions, sports experts' tournaments, quiz games, exhibitions, presentations, physical education based quest games etc. – to promote the Olympic values and competences in the youth communities, advance the sporting cultural and humanistic agendas and help the young people open up their spiritual and ethical resources.

Results and discussion. For the last decade the academic health system has reported low health standards of the university entrants. In 2007 the INRTU health service qualified more than a half of the first–year students with the basic and preparatory health groups (52.5% and 16.3%, respectively), and only 23.3% with the special health groups – that was the lowest special health groups rate for the study period [2]. It should be noted that the basic health group share varied around 50% (from 40.6% in 2009 to 57.2% in 2012) for the study period. The subsequent annual health tests found no significant changes in the students' health standards. It was only since 2014 when the

Physical Education Department launched the new physical activation and healthy lifestyle cultivation models that the basic health group shares grew to 69.1% and 67.9% as a result of the post–first– and post–second–year health tests for account of the preparatory group shares contracting to 6.1% and 6.5%, respectively. Qualified for the special health groups at that time were 23.4% and 24% of the first– and second–year students, respectively.

We run a questionnaire survey to rate actual benefit of the new physical activation and healthy lifestyle cultivation technologies (including dance sport festivals, flash mobs, etc.) – to find that most (93.6%) of the respondents appreciate the healthy lifestyle advancement events and projects, with 91.7% of the sample reportedly being motivated by the latter for the habitual physical education and sports. Benefits of the new technologies were verified by the progresses in the physical health test rates in every health group under the study.

Thus the 2008 versus 2019 health tests found progress of the sample in the endurance rating 1000m race test, with the groups rated 'low' and 'below average' on the physical development and physical fitness scales [3] found to contract by 16.9%; and the 'moderate' and 'above average' groups to grow by 7.9% and 6.9%, respectively. In the standing long jump test, the 'low' rated group contracted by 11.6% due to the growth in the 'average' and 'above average' rated groups (by 2.9% and 16.6%, respectively). The sample also showed progress in the prone push–ups test, with the 'low' and 'below average' groups found to contract by 35.7%, and the 'average', 'above average' and 'high' rated groups found to grow by 16.5%, 21.3% and 72.2%, respectively; with the similar progress in the physical development tests.

Conclusion. The study data and analyses showed benefits of the new academic physical education and healthy lifestyle cultivation technologies as verified by the surveyed growth of the students' interest in the habitual physical education and sporting practices and lifestyles. The technologies were found to effectively develop the physical education / sporting values and priorities and contribute to the health protection and improvement agendas of the students, with the clear benefits for their progress in the socializing qualities and skills and competitiveness on the labor markets.

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HEALTHY LIFESTYLE CULTIVATION AND PSYCHOMOTOR PROGRESS MODEL FOR ELEMENTARY SCHOOL

UDC 796.011.3

Dr. Hab., Professor **K.K. Markov**[1]
Dr. Hab., Associate Professor **M.D. Kudryavtsev**[2,4,5]
T.D. Lmpetova[3]
[1]National Research Irkutsk State Technical University, Irkutsk
[2]Siberian Federal University, Krasnoyarsk
[3]Lyceum No. 2, Krasnoyarsk
[4]Siberian State University of Science and Technology n.a. Academician M.F. Reshetnev, Krasnoyarsk
[5]Siberian Law Institute of the Ministry of Internal Affairs of the Russian Federation, Krasnoyarsk

Corresponding author:
k_markov@mail.ru

Annotation

In the setting of a busy and fast paced life of modern society, the problem of formation of health values in the younger generation, especially at an early age, during the first years of study and growing up, is of particular importance. Objective of the study was to determine how significant the values of a healthy lifestyle are for elementary school students in the process of physical education. The study was conducted at the premises of Krasnoyarsk State Pedagogical University named after V.P. Astafyev, Municipal Educational Institution Lyceum No. 2 and a number of other educational institutions of Krasnoyarsk. A total of 1096 elementary school students took part in the educational experiment. The structure and content of recreational activities that contribute to the formation of healthy lifestyle skills and improvement of psychomotor competence of elementary schoolchildren consisted of recreational measures focused on the prevention and correction of health disorders, prevention of colds, especially in dangerous periods of the year. The Control Group subjects were trained according to the traditional physical education program; while the Experimental Group subjects – using the techniques of mastering of health-improving components of physical education process based on the author's works. The attention of the school students and teachers was constantly directed to activity, process, rather than the final result or a qualifying standard.
The three-year educational experiment revealed a significant advantage of the Experimental Group school students over their peers from the Control Group in terms of the levels of physical and psychomotor development and mastery of healthy lifestyle skills in younger school students.

Keywords: *healthy lifestyle, school students, physical education, psychomotor skills, competences, abilities.*

Background. Unhealthy lifestyle is known to expose to multiple health risks that may be effectively inhibited by a conscientious healthy lifestyle formation efforts driven by sound motivations and health protection and management skills including the physical and emotional control and psychomotor progress motivations and agendas [1, 3, 6–10]. The healthy lifestyle cultivation initiatives should be governed by the modern school physical education concepts to facilitate the healthy lifestyle skills and competency building in the mental, physical and moral progress aspects. As things now stand, the national educational system strives to meetthe social demand for a healthy personality raising service with a special focus on the sporting, physically and mentally active and developmental lifestyle. Developmental programs for the elementary school system are still in need of special theoretical and practical methods and tools to offer new physical education models based on modern educational technologies with special health improvement initiatives to reverse the recently reported health deterioration trend in the elementary school system.

Objective of the study was to analyze benefits of a new healthy lifestyle cultivation and psychomotor progress model applicable as complementary to the elementary school physical education service.

Methods and structure of the study. The study was run at Krasnoyarsk State Pedagogical University named after V.P. Astafyev, Lyceum № 2 and a few other educational institutions in Krasnoyarsk. Sampled for the new model testing experiment were 1096 elementary schoolchildren. We designed our healthy lifestyle cultivation, psychomotor progress and health competence building model based on the modern health education technologies and fundamental provisions of the study reports by V.V. Davydova [2]. The health improvement component of the model made a special emphasis on the seasonal respiratory disease prevention elements, particularly in the high-risk months.

In the EG, the physical education classes and off-class trainings for physical activation included special exercises to develop the psychomotor qualities, overall endurance, muscle strength and flexibility, and excel the movement controls and sensitivities in every physical training practice.

Table 1. *Pre- versus post-experimental healthy lifestyle skills tests of the EG versus RG*

Healthy lifestyle skills tests	RG		EG		Difference significance rate	
	Pre-exp	Post-exp	Pre-exp	Post-exp	t	p
Physical education knowledge	30,2 + 2,2	31,1 + 4,3	25,7 + 3,1	55,2 + 5,9	2,98	< 0,01
Physical education tools usage skills	16,9 + 1,8	20,8 + 3,9	20,1 + 2,9	49,8 + 4,9	3,85	< 0,01
Physical training control skills	12,8 + 1,5	14,8 + 2,9	12,8 + 1,5	40,1 + 3,9	3,95	< 0,01
Physical education knowledge appli – cation skills	22,7 + 3,9	24,8 + 6,1	23,1 + 5,2	49,3 + 4,8	2,97	< 0,01
Body tempering skills	11,7 + 1,1	14,9 + 1,6	12,3 + 1,2	19,9 + 2,1	2,53	< 0,05
Tolerance to bad habits	69,4 + 5,9	71,1 + 3,8	70,6 + 5,6	84,9 + 3,8	2,23	< 0,05
Immunity to flu	57,1 + 5,8	55,3 + 5,9	59,7 + 7,6	76,3 + 7,7	2,35	< 0,05
Healthy lifestyle skills and habits	36,3 + 6,8	37,9 + 9,8	37,1 + 8,7	121,1 + 8,7	3,96	<0,01
Walking skills	2,3 + 0,7	2,5 + 0,6	2,6 + 0,4	3,9 + 0,6	2,31	< 0,01
Physical – education – specific breath controls	2,8 + 0,7	2,9 + 0,5	2,7 + 0,5	3,9 + 0,7	3,51	< 0,05
Physical qualities	2,3 + 0,7	2,6 + 0,5	2,4 + 0,6	4,1 + 0,8	2,28	< 0,05
Basic hygienic habits	2,7 + 0,5	2,9 + 0,8	2,9 + 0,6	4,2 + 0,7	2,38	< 0,05
Injury prevention skills	2,6 + 0,5	2,7 + 0,6	2,9 + 0,7	3,5 + 0,7	2,43	< 0,05
Physicality control skills	2,5 + 0,6	2,7 + 0,7	3,1 + 0,5	4,3 + 0,6	2,28	< 0,05
Morning gymnastics	2,5 + 0,6	2,7 + 0,8	2,9 + 0,5	3,9 + 0,8	2,15	< 0,05

The off – class trainings gave a special priority to the el – ementary healthy lifestyle skills and habits cultivation ele – ments dominated by active games. The EG trainings were designed to help the children master the health aspects of the physical education practices based on provisions of the relevantstudies [2,4,5]. The attention of students and teach – ers was constantly focused on the ongoing process rather than on the final goals or standards. A special emphasis was made on a favorable psychological climate for the practices, with suggestions on the health benefits of each practice in particular and healthy lifestyle on the whole, to persistently cultivate the elementary healthy lifestyle skills and hab – its. The RG trainings were designed in compliance with the age – specific physical education service standard.

Results and discussion. The pre – experimental healthy lifestyle skills tests found no meaningful intergroup dif – ferences: see Table 1 hereunder).

As demonstrated by the above Table, the 3 – year mod – el testing experiment found the EG training model being beneficial as verified by the significantly higher progresses of the EG versus RG in the pre – versus post – experimental healthy lifestyle skills tests, with the EG tested with par – ticularly significant ($p<0.05$) progress in the body temper – ing, tolerance to bad habits and healthy lifestyle motivations tests and most of the other ($p< 0.01$) elementary healthy lifestyle tests. Analysis of the test data showed benefits of the new healthy lifestyle cultivation and psychomotor progress model for the elementary school children, with the EG pre – versus post – experimental tests showing a sig – nificant progress versus the RG – that showed insignificant progress for the study period.

On the whole, the experiment showed that focused edu – cation and training models are needed to form habitual healthy lifestyle skills and secure good physical progress; and that the common teachers' beliefs in the natural unas – sisted children's progress may not be realized in practice unless the progress facilitated by special physical education and health/ healthy lifestyle knowledge building models. The healthy lifestyle cultivation model that we applied in our study secured stable and significant ($p <0.05$) progress in the EG versus RG to demonstrate practical benefits of the focused educational methods for the healthy lifestyle cultivation and psychomotor progress purposes.

Conclusion. The new healthy lifestyle cultivation and psychomotor progress model tested as complementary to the elementary school physical education service was found beneficial as verified by the EG progress in the elementary healthy lifestyle skills tests versus RG. The health – im – provement focus in the EG trainings was found to facilitate physical progress in the physical education trainings plus good progress in the healthy lifestyle related knowledge and skills on the whole and in the body tempering and some other physical education / healthy lifestyle com – ponents in particular. The new healthy lifestyle cultiva – tion and psychomotor progress model is recommended for application in the physical education programs of the el – ementary school system.

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ADAPTATION MODEL OF ORGANIZATION OF STUDENTS' MOTOR ACTIVITY

UDC 796.011.3

PhD, Associate Professor **L.A. Kadutskaya**[1]
Dr.Hab., Professor **L.N. Voloshina**[1]
Dr.Hab., Professor **V.L. Kondakov**[1]
Dr.Hab., Professor **V.N. Irkhin**[1]
[1]Belgorod State National Research University, Belgorod

Corresponding author:
nikulin_i@bsu.edu.ru

Annotation

The article presents the results of analysis of domestic and foreign literature devoted to the study of the problems of regulation of motor activity in children, as well as the results of analysis of normative program-methodical documentation, educational standards, exemplary training programs and other documentary materials that regulate students' motor activity. The analysis of recent studies of motor activity in children of preschool and school age makes it possible to identify common scientific interests of domestic and foreign scientists and testifies to the urgency of the issue of optimization of students' motor activity. The problem of regulation of children's motor activity in terms of the adaptive approach is still understudied. Based on the analysis results, we developed and proposed an adaptation model of organization of children's motor activity basing on comprehensive consideration of students' adaptation to the educational environment.

Keywords: *physical activity, students, adaptation, adaptive approach, modeling, educational service.*

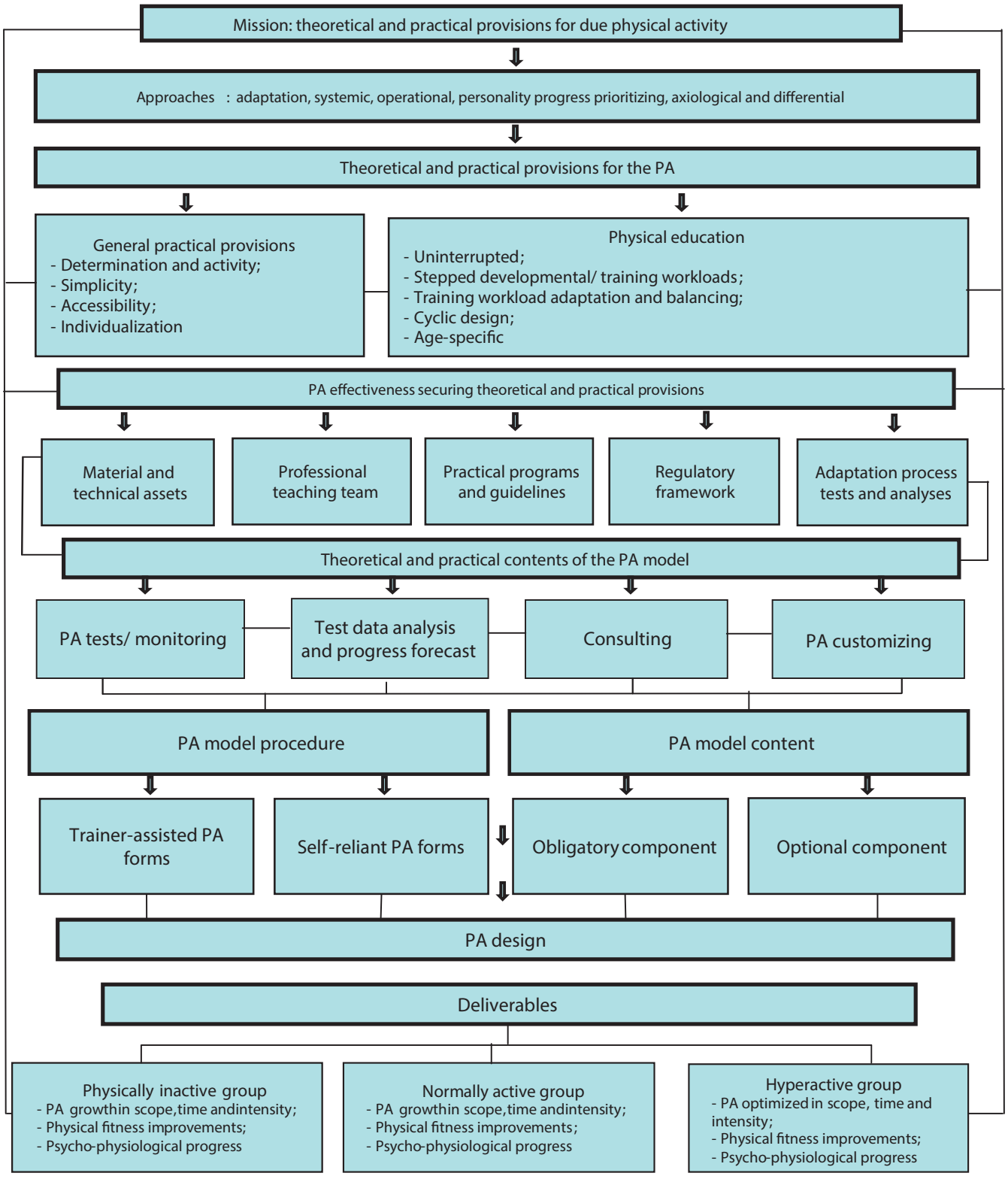
Background. Modern lifestyles are associated with fast transformations in the students' preferences, interests, values, priorities and physical training needs (in the quantitative and qualitative terms), with the modern underage population often being either hyperactive of physically inactive. The relevant national and foreign studies tend to explain the negative trends by the modern academic curriculum being increasingly demanding to the students' intellectual and cognitive qualities and resources; mentally and physically stressful and limiting the children's leisure time [2, 9]. It should also be noted that the efforts to physically activate children are limited by the lack of physical activity standards in the valid sanitary–epidemiological codes for the modern education services. It is not unusual that the hyperactive or physically inactive underage lifestyles result in stress and bad habits further complicated by metabolic process disorders, musculoskeletal system pathologies etc., i.e. students' health issues [4]. Despite the multiple national and foreign studies of the above problems, the educational system is still in need of comprehensive physical activity models customizable to the children's actual age-specific abilities, needs, interests, values and priorities – to secure the developmental processes being effective and healthy. This was the reason for us to develop our version of physical activity design and management model for the modern national education system.

Objective of the study was to design, based on an analysis of the relevant national and foreign study reports, an adaptive physical activity model for the national educational system.

Methods and structure of the study. We analyzed the relevant national and foreign study reports to summarize the theoretical and practical data on the children's physical activity regulation methods.

Results and discussion. As provided by the valid [sanitary–epidemiological standards] SanPiN 2.4.2.2821–10 (amended version of May 22, 2019), the students' natural biological need for movement shall be met by at least 3 physical education sessions a week (including the class and off–class physical education service); albeit the standards give no specific physical activity norms nor methods to rate the daily physical activity. No wonder that the associating issues of the physical education service customization/ adaptation to the actual students' physical abilities and needs are still largely underexplored and unsolved.

We believe that the efforts to design and implement a modern adaptive physical activity model to effectively control the students' physical activity in the educational process may be complicated by the fact that they should provide reliable testsystems to rate both the students' adaptation to the educational service, and the educational service adaptation to students' needs. The student's adaptation to the educational service implies transformations in the emotional–volitional, motivational and cognitive domains to meet the changing school requirements. The



Adaptation model of organization of students' physical activity

more stringent are the educational service requirements to the students, the more difficult may be their adaptation processes.

The above reasoning demonstrates the need for modern adaptive physical activity models for the educational system with a comprehensive adaptation process tests and analyses. We designed our version of such adaptive physical activity model (see Figure 1 hereunder), with the theoretical and practical concepts for the modeling found in studies by V.K. Bal'sevich; T.E. Vilenskaya; L.N. Voloshina; A.G. Komkova, L.I. Lubysheva; I.A. Krivolapchuk; S.D. Neverkovich; Y.K. Chernyshenko etal. [1–3,5–8].

Mission and goals of the adaptive physical activity model, as we believe, may be attained only based on the following provisions: material and technical assets; professional teaching team; modern theoretical and practical education programs; sound regulatory framework; and effective adaptation process test and analyzer system. Methodologi–

cally, the new physical activity model was designed using adaptation, system, operational, personality progress prioritizing, axiological and differential approaches. The new physical activity model includes the following components: goal–setting, content, procedure, and deliverables; with the model controlled using the relevant physical activity testing, monitoring, analyzing, progress forecast tools; and with the trainees' being controlled and consulted to secure the physical activity service being effectively customized on an individualized basis in terms of the procedures and contents.

Conclusion. It is the modern social demand for a healthy and reasonably physically active new generation immune to hyperactivity and physical inactivity that urges the research community to offer a modern physical activity model for the educational system customizable to the actual adaptive capabilities of the students, with the educational service in its turn customizable to the students' actual abilities, needs, interests, values and priorities in the physical activity domain. The adaptation physical activity model analyzed herein includes the goal–setting, content, procedure and deliverables components; spells out the physical activity model implementation provisions; and makes it possible to timely customize the physical activity scope, time and intensity to the students adaptability resource so as to secure progress in physical fitness and a variety of psycho–physiological aspects.

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PHYSICAL EDUCATION AND SPORTS MOTIVATIONS TO DEVELOP STUDENT HEALTH CULTURE

UDC 796.011.1

Dr. Hab., Professor **V.I. Bondin**[1]
PhD, Associate Professor **T.A. Stepanova**[1]
PhD, Associate Professor **M.V. Belavkina**[1]
[1]Southern Federal University, Rostov-on-Don

Corresponding author:
tastepanova@sfedu.ru

Annotation

Objective of the study was to create a health culture in university students during physical education and sports activities.
Methods and structure of the study. The study revealed the mechanisms of formation in university students of motivation for physical culture and sports activities, as well as identify approaches to the implementation of the Physical Education and Sports discipline as provided by the Federal State Educational Standard and the ways to organize work so that to create a health culture in the student community.
Results of the study. Implementation of innovative approaches into the physical education process is dictated by the current requirements of the Federal State Educational Standard of Higher Education. The authors' programs include: updated data on the physiological mechanisms, psychological and pedagogical foundations of health, and modern technologies for the motivated choice of sports sections (as an elective component of the Physical Education and Sports discipline).
Conclusion. The authors note that modern scientific developments in the field of study of human beings and the accumulated advanced experience in health and fitness work with university students are of great importance and form the basis for improving the physical education process focused on the formation of their health culture.

Keywords: *motivation, needs, physical education and sports, student community, sports groups, health culture.*

Background. Motivational tools are in special priority in the educational system as pivotal for success of the studies on the whole and the academic Physical Education and Sports discipline in particular – as underlined by the valid relevant Federal State Educational Standards. Modern physical education and sport service mission, however, is not only to form the competences required by the Federal State Educational Standards but also to develop what is called the student health culture by the relevant motivational methods.

Objective of the study was to offer an academic physical education and sport service driven model prioritizing the student health culture development mission.

Methods and structure of the study. A recent survey by the Physical Education and Sport Academy found the university students being poorly motivated for the physical education and sport classes, with 53.5% of the students tested with low if any interest in physical education and sport; only 31.3% reportedly interested in sports; 15.2% disinterested in sports; and above 65.3% reluctant to physically train on their own. The survey data cannot but raise questions about the physical fitness of the future graduates for their professional service, particularly in the context of the health deterioration trends found by many recent university health studies.

Thus the regular health tests and examinations in the national educational system have showed that, despite the relatively high share of the student population attending the physical education and sport classes (90.28% of the total), many of them are diagnosed with health disorders since the beginner year. The diagnosed health issues may be classified as follows: musculoskeletal system disorders: 29.5%; visual system disorders: 26.2%; nervous system issues: 13.1%; cardiovascular system disorders: 8.2%; respiratory system disorders: 8.2%; congenital pathologies: 4.9%; excretory system pathologies: 3.3%; sexual disorders: 3.3%; endocrine system disorders: 1.6%; and digestive system malfunctions: 1.6%.

It would be only natural in the above context to expect the young people being highly motivated for health-improvement physical training service models, albeit the actual survey data shows the different trend – apparently due to the so-called negative motivations, with the students perceiving the physical education and sport service as the obligatory academic discipline that should be attended only to get academic credits and avoid arrears. The negative motivations can undoubtedly be used for productive pur-

poses in some cases, although they are still counterproductive for the efforts to engage the young people in the active leisure-time games/ sports/ events, healthy life-styles etc.

Results and discussion. The initiatives to develop a habitual demand for the physical education and sport activity and tolerance to the so-called bad habits should make a special emphasis on a positive motivations formation system that may be visualized as tiers of the A. Maslow pyramid [4]. Thus the relevant physical education and sport service model implemented at Southern Federal University in compliance with the valid Federal State Educational Standards offers a set of theoretical and elective practical courses. The theoretical course developers gave a special priority to the basics of the own physical progress test mechanisms and training workload management skills – in view of the above survey data that demonstrated 79.1% of the sample facing problems when trying to calculate and manage their individual health-improvement training workloads; and 87.3% found unaware of the health protection and improvement mechanisms and taking no efforts to develop the own health culture using the academic physical education and sport toolkit.

The above theoretical course was designed with consideration for the age-specific group physiology and future professional requirements and responsibilities. The process was facilitated by the logically supportive academic Life Safety curriculum that was also developed by the Physical Education and Sport Academy experts to equip students with the basic knowledge of healthy lifestyles and safe behaviors. The curricula were complemented by the healthy/ safe lifestyle formation components. The theoretical course also gives knowledge of the human constitution, bodily systems, internal organs, nervous system regulation processes, hormonal profiles, temperaments and other hereditary/ personality qualities and specifics that need to be taken into account in the physical education and sport service design and management process.

Generally the physical-education-and-sport-service-driven health culture building model was designed on a kinesisenergonomic approach (from the Greek "kinesis" or movement, "energia" or energy and "nomos" meaning the law or rules) [2]; with the model giving the means to design a heath physical education and sport technology including an energy-costs-compensating well-balanced healthy diets.

The next tier of the motivational pyramid refers to a specific interest group. Our physical education and sport-service-driven health culture building model meets these interests by the elective group physical education and sport service forms. Prior to grouping, the sample health is tested to offer a range of the health-specific grouping and training options; and then every health group is given the health-improvement training system. Such grouping approach may be called elective sport-specific [1, 3]. Students of every specialty are offered a few optional health-specific voluntary sports groups with the flexible training schedules and trainings customizable to the individual preferences. Generally, the elective groups are classified into the following three types: therapeutic/ health-improvement groups; excellence sports groups for the students having some sport qualifications/ accomplishments; and sports-specific physical fitness groups. The model gives every student an individual group sport option that meets his/ her interests, preferences and respects the actual health resources/ limitations. It is important that the sports groups not only give the means for progress in the preferred sport/ fitness area but also help establish the social contacts for the self-expression and self-assertion agenda. It should be noted that the optional sports grouping is determined by the available academic sports infrastructure, regional specifics, local ethnic sporting traditions, climatic specifics and some other factors.

Conclusion. The academic physical education and sport service development initiatives at the Southern Federal University are generally geared to expand the sports group options, with a special priority to the sport disciplines of the highest appeal for the local/ ethnic youth communities (like sambo, judo, freestyle wrestling, mountaineering) and a few newly emerged sports disciplines of special interest for the students. It has long been traditional for the multinational university to run competitions of different ethnic groups and national teams within the student community. These physical education and sport disciplines and events help not only activate and motivate the students for physical progress but also facilitate the social contacts, communication and friendship of different ethnic groups and local youth cultures, with a special socializing and physical education and sport benefits for the foreign students. The physical education and sport -service-driven health culture building model implemented at Southern Federal University has proved beneficial both for the academic progress and health motivations development in the student community.

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CARDIORESPIRATORY SYSTEM FUNCTIONALITY IN STUDENTS INVOLVED IN THERAPEUTIC SWIMMING

UDC 796.011.1.364.25

V.S. Milashechkin[1]
A.V. Rusanov[1]
A.S. Valyugo[1]
[1]Peoples' Friendship University of Russia, Moscow

Corresponding author:
ea.milash@yandex.ru

Annotation

Objective of the study was to assess the state of the functional reserves of the cardiorespiratory system of students involved in therapeutic swimming.
Methods and structure of the study. The study was carried out in vivo at the premises of the Peoples' Friendship University of Russia and public swimming pool "Harmony", SBI "Physical Culture and Sports Center of the South-West Administrative District of Moscow", Moscow Sport Committee. Sampled for the study were the 1st-2nd-year male students without health deviations, who were divided into two groups: 1st — Control Group — representatives of the body conditioning group (n=28); 2nd — Experimental Group — students engaged in competitive therapeutic swimming (n=17). The cardiorespiratory system functionality was assessed based on the following indicators: chest excursion, vital capacity, oxygen concentration in the capillary blood (in %, using a pulse oximeter), heart rate, systolic blood pressure, diastolic blood pressure, pulse pressure.
Results of the study. The pulse oximetry method revealed that at the beginning of the academic year, oxygen concentration in the capillary blood in both groups did not exceed 96-97%. At the end of the academic year, the average oxygen concentration in the Control Group students remained at the level of 96.32±0.61%, while in the Experimental Group students this indicator increased to 98.47±0.52% ($p<0.01$), which testified to the improvement of the peripheral blood circulation in the students engaged in competitive therapeutic swimming.
Conclusion. As seen from the findings of the study, the following external respiration rates increased objectively in the students involved in competitive therapeutic swimming, which indicated an increase in the power reserves of the cardiorespiratory system: vital capacity, systolic blood pressure, and pulse pressure, as well as oxygen concentration in the capillary blood.

Keywords: *competitive therapeutic swimming, students, health, cardiorespiratory system, functional reserves, physical education.*

Background. Students' physical activity is an integral part of the educational process at the modern university. However, not every university provides an opportunity for students to choose the type of physical activity they would like to do during the physical education classes. At the Peoples' Friendship University of Russia, students are encouraged to choose a sports specialization. Of course, it is impossible to comply with the wishes of all students, but the majority of sports preferences can be realized. Among the most popular types of physical activity is competitive therapeutic swimming. Students with different levels of physical and technical fitness can start swimming. Swimming solves several tasks at once — not to mention it is a necessary applied skill [1] and a means for the comprehensive development of the basic physical qualities and expansion of the functional reserves of the body [3, 4, 6]. According to the literature data, more than 50% of university students are in failing health [5]. One of the reasons of health deterioration among young people studying at universities is decreased motor activity and physical load relief, which means that young people need that kind of motor activity, in which, over a relatively short period, they will get an adequate training load not only on the skeletal muscles but also on the leading adaptation systems of the body that increase its functional reserves [2]. The cardiorespiratory system in one of them.

Objective of the study was to assess the state of the functional reserves of the cardiorespiratory system of students involved in therapeutic swimming.

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Table 1. *Students' cardiorespiratory system performance rates at the end of the academic year*

Indicators	CG	EG	p
Chest excursion, cm	7.41±0.13	9.74±0.42	>0.05
Vital capacity, l	3.82±0.08	5.20±0.15	<0.001
Heart rate, bpm	85.68±3.12	81.74±2.45	>0.05
Systolic blood pressure, mmHg	123.18±3.57	116.24±3.14	>0.05
Diastolic blood pressure, mmHg	89.25±2.50	76.12±1.90	<0.01
Pulse pressure, mmHg	33.82±1.05	40.75±1.06	<0.01

Note. p – significance of differences in the mean group values between EG and CG.

— Experimental Group — students engaged in competitive therapeutic swimming (n=17). The cardiorespiratory system functionality was assessed based on the following indicators: chest excursion, vital capacity, oxygen concentration in the capillary blood (in %, using a pulse oximeter), heart rate, systolic blood pressure, diastolic blood pressure, pulse pressure.

Results and conclusions. At the beginning of the academic year, the subjects' cardiorespiratory system performance rates were measured based on the declared indicators. There were no statistically significant differences between the mean cardiorespiratory rates (p>0.05). At the end of the academic year, the chest excursion rate remained unchanged in the Control Group students and amounted to 7.34±0.67 cm, while in the Experimental Group ones it slightly improved (p>0.05). Such objective indicator of the external respiration as vital capacity increased in the students of both groups; yet, in the Experimental Group, this indicator differed significantly from that in the Control Group – increasing tendency (see Table 1). heart rate and systolic blood pressure did not differ significantly between the Experimental and Control Group at the end of the academic year either. However, diastolic blood pressure and pulse pressure in the students involved in competitive therapeutic swimming differed statistically significantly (p<0.01), which indicated an increase in the power reserves of the cardiac activity.

The pulse oximetry method revealed that at the beginning of the academic year, oxygen concentration in the capillary blood in both groups did not exceed 96–97%. At the end of the academic year, the average oxygen concentration in the Control Group students remained at the level of 96.32±0.61%, while in the Experimental Group students this indicator increased to 98.47±0.52% (p<0.01), which testified to the improvement of the peripheral blood circulation in the students engaged in competitive therapeutic swimming.

Conclusion. As seen from the findings of the study, the following external respiration rates increased objectively in the students involved in competitive therapeutic swimming, which indicated an increase in the power reserves of the cardiorespiratory system: vital capacity, systolic blood pressure, and pulse pressure, as well as oxygen concentration in the capillary blood.

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INTERNATIONAL WORKERS' SPORTS MOVEMENT SPEARHEADING ATTEMPT BY "PROLETARSKY SPORT" JOURNAL

UDC 796(091)

PhD, Associate Professor **K.A. Alekseev**[1]
[1]St. Petersburg State University, St. Petersburg

Corresponding author:
k.a.alekseev@spbu.ru

Annotation

Objective and structure of the study. Proceeding from the analysis of archive materials and sports periodicals, the article presents the circumstances of launching and closing of the Proletarsky Sport Journal, the official body of the Executive Committee of the Red Sport International. The Journal began to be published by the Supreme Council of Physical Culture at the All-Russian Central Executive Committee in 1925 for two main purposes: to strengthen the position of the Supreme Council of Physical Culture as the Russian section of Red Sport International; to promote the ideas of proletarian sports movement on the eve of the Workers' Olympiad in Frankfurt.

Results and conclusions. The authors note that propaganda, which became the main prerequisite for launching the Proletarsky Sport Journal, was one of the priority activities of Red Sport International. However, the nature, scope and content of propaganda were transformed depending on the tactics dictated by the situation of a particular period. This predetermined the main reason for the imminent termination of the Journal: the need to make a pause to reconsider tactics after the failure in the Workers' Olympiad in Frankfurt. Coupled with a number of additional factors (the conflict at the top of the Soviet physical education system, economic reasons), it made a special agitation-and-propaganda body of the Russian section of Red Sport International unwanted by both the leaders and the audience. No further attempts were made in the future to publish a similar journal.

Keywords: *international sports, sports periodicals, advocacy, Red Sports International.*

Background. In the 1920s the international workers' sports became a battlefield for conflicting interests. In 1921 the Red Sports International was launched in Moscow to oppose the Lucerne Sports International established in 1920 by a Congress of Workers' Sports Organizations of social democratic spectrum. Key missions of the Red Sports International were the following: (1) mobilize the growing sports movements for a social revolution; (2) 'establish a powerful proletarian revolutionary sports union in every country <...> and use it to train, in the legal sporting environments, determined and consolidated human combat resource indoctrinated by the communist world outlook' [4, p. 21].

The Red Sports International efforts to establish a consolidated global proletarian sports army heavily contributed to its confrontation with the Lucerne Sports International, since both organizations claimed being the sole leaders of the workers' sports movement. The Red Sports International gave a special priority in this confrontation to its own journal, "published as far as possible in three languages (Russian, German, French)" [4, p. 21] and sponsored in the early 1922 by a RUB 320 million 'credit' from the Communist Lucerne Sports International. [4, p. 91]. The fist German version called "Proletarsky Sport Journal" was out of print only in August 1923 in Berlin and since then was published till 1927 [6, p. 225], whilst the Russian version called 'Proletarsky Sport Journal', a formal Red Sports International Executive Committee's edition, was published in 1925 and stayed afloat for only one year.

Objective of the study was to analyze the available 1920s archives and sports periodicals to find out the reasons for establishment and closure of the 'Proletarsky Sport Journal'.

Results and discussion. Analysis of the Proletarsky Sport Journal lifetime provides an insight into the 1920s history of the European sports movement of that time on the whole and the physical education and sports movement in the USSR in particular. It was N.I. Podvoisky, General Military Education (Vsevobuch) General Directorate Head and Supreme Council for Physical Culture (SCPC reporting to Vsevobuch) Chairman, who was nominated the first Chairman of the Red Sports International Executive

Committee in 1921. In 1924 the Vsevobuch was dismissed, whilst the SCPC in 1923 was upgraded to an independent interdepartmental agency reporting to the Russian Central Executive Committee and headed by the People's Health Commissar N.A. Semashko who was in conflict with Podvoisky on many ideological and personal grounds.

Podvoisky at that time was still the Red Sports International Head, and the above conflict could have had an inhibiting effect on the SCPC foreign sport control and management policies. In 1924, however, the SCPC took special efforts as the Red Sports International Russian Office to respond to the following catalyzing events: 3rd Red Sports International Congress scheduled for October 1924 in Moscow; and, even more important, the upcoming World Workers' Olympic Games under auspices of the Lucerne Sports International scheduled for July 1925 in Frankfurt am Main. The Red Sports International Executive Committee on its meeting in May 1924 decided to oppose the "reformist bureaucratic' Lucerne Sports International intentions to degrade the Olympic Games to a purely sporting (rather than political) event. The Red Sports International EC decision reads: "The first international workers' Olympics should <...> openly demonstrate the connection between the proletariat's physical culture and its class struggle" [5, p. 62]. The Olympics, therefore, was viewed as the key battlefield for the propagandist activity, and the win or loss in the confrontation depended on who and how leaded this activity. Back in August, the SCPC Plenum decided that "the SCPC, Central Committee of the Party and the Young Communist League must pay a special attention to support the Sports International; and (2) Support publications of the Russian version of "Proletarsky Sport" Journal [2, p. 23].

Proletarsky Sport Journal was published since 1925 as an appendix to "Izvestia Fizicheskoy Kultury' ['Physical Culture Bulletin'], an official edition of the SCPC. The Proletarsky Sport Journal was edited at that time by N. Semashko and F. Reisner, German "Spartak" supporter, Red Sports International Executive Committee Secretary and the most active author of the Proletarsky Sport. The new edition was intended for the Soviet physical education enthusiasts and working athletes from the Baltic nations, Poland and Balkans who enjoyed special subscription benefits [3, p. 42].

Therefore, the new Russian sports publication sponsored by the Red Sports International Executive Committee was intended to strengthen the Red Sports International in its struggle with Lucerne Sports International for the international workers' sports movement control and with the internal opposition led by N. Podvoisky. The growing internal tensions were manifested in the delays of the bimonthly publications due to the resistance and obstacles from the Red Sports International Executive Committee Secretariat. The second Secretary F. Reisner responsible for agitprop and supported by Semashko was in conflict with the first secretary G. Lemberg who supported Podvoisky and was in charge of the organizational and political matters. The available correspondence bears evidence of the major (and long discussed) objections to the articles offered for publications in the Proletarsky Sport Journals [3, p. 44], difficult agreements and long delays in clearing the articles for print [3, p. 279]. Thus the third issue was out of print only when the Frankfurt Olympiad was launched and the topics of the international workers' sports were no more relevant since the Red Sports International athletes were barred from the competitions.

The Lucerne Sports International leadership insisted on the Red Sports International offices being incorporated in its system as a prime condition for qualification of the Red Sports International athletes, and rejected proposals from the Red Sports International Executive Committee and a special letter from SCPC seeking qualification for at least the USSR team. Thus the Red Sports International failed in its attempts to turn the workers' sports event into a battlefield in the struggle of classes, and the time came for the Red Sports International to review and change its policies in contracts with the International.

As provided by the French researcher A. Gounod, the Red Sports International system and policies were contradictory due to the conflict between its leadership that pursued political goals and most of the working athletes who were interested in sports rather than politics [7, p. 35]. Most of the Proletarsky Sport Journal subscribers were attracted by editorials with promises to keep them informed on the foreign workers' sports by well illustrated detailed materials; although upon the Red Sports International athletes being barred from the Frankfurt Olympics, the Proletarsky Sport Journal coverage was instead dominated by the ideologically biased articles stigmatizing the "Lucerne bureaucrats."

Upon completion of the Olympics, the Proletarsky Sport Journal lost interest both for the mass readers and for the founders due the failure of its core mission. The Journal was filled up with random materials for some times, although its publications were more and more irregular (with the last doubled issue No. 5–6 released only in early 1926), and the circulation was catastrophically sagging (No. 3 – 15,000, No. 4 – 10,000, No. 5–6 – 4500 copies). Further publications became impractical in both political and economic terms, and the SCPC publishing house announced: "We are forced to close the Proletarsky Sport Journal due to its economic inefficiency and high overhead costs telling on the other publications" [1, p. 1].

Conclusion. As soon as the Red Sports International was established, its core policy was to advance the political agenda by propagandistic publications including the Proletarsky Sport Journal, with their coverage, focuses and interests determined by the time-specific political goals. This appears to be the main reason for the early closure of the Proletarsky Sport Journal when the Red Sports International management acknowledged the need for new policies after the failure with the Frankfurt Olympics. The situation was further aggravated by many other factors including conflicts in the Soviet physical education and sports sector management agency, economic hardships etc. and, as a result, the Red Sports International Russia's agitation and propagandist publications were relevant any more neither for the leaders nor for the mass physical education and sports movements. Later on no further attempts were made to launch once again a journal of that kind.

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5-17 YEAR-OLDS' PHYSICAL DEVELOPMENT VERSUS PHYSICAL FITNESS PROGRESS TESTS AND ANALYSIS

UDC 796(075.8)

Associate Professor **E.A. Koipysheva**[1]
Dr. Med., Professor **V.Y. Lebedinskiy**[1,2]
[1]National Research Irkutsk State Technical University, Irkutsk
[2]Irkutsk State University, Irkutsk

Corresponding author:
koip00@mail.ru

Annotation

For preschoolers, school and university students, the optimal level of motor activity is a physiological need and an important component of their healthy lifestyle. In this view, we conducted a comparative analysis of the levels of their physical development and physical fitness at the early stages of ontogenesis (n=10,618). The monitoring technologies made it possible to detect a certain correlation of changes in the respondents' rates.
When comparing the growth rates of physical development and physical fitness of the preschoolers, the maximum increase in terms of most indicators was observed at the age of 5-6 and this trend was typical of the children of both sexes.
The schoolchildren were characterized by the alternating periods of growth of physical development and physical fitness rates. The physical development indicators in the girls increased rapidly at the age of 12-13; moreover, in their development they significantly outpace boys (13–15 years). Among boys, the maximum increase in the physical fitness rates (8-11 years) takes a longer period of time, especially after 14 years. In girls, the most intensive growth is observed at the age of 9-11.
The female students were not found to have any significant alternations in the growth of these parameters, since, basically, the process of their physical development, running in parallel with their physical fitness training, comes to an end, however, it depends on the peculiarities of organization of physical education classes for students.

Keywords: *physical development, physical fitness, physical education service, physical health, preschoolers, schoolchildren, university students, tests, healthy lifestyle.*

Background. Physical education service in the national education system is designed to protect and improve the students' health, cultivate healthy lifestyles and lay a basis for the physical progress agendas for the whole lifetime. The individual progress facilitation and health improvement efforts, however, largely depend on the theoretical systemic provisions for the individual physical activity [1,3,5,6,8,11–13], with the physical education service being reasonably customized to age, morphology and functionality – collectively referred as the *individual progress heterochronism* i.e. irregularity with the progress acceleration, deceleration and stabilization periods [2,4,9,10].

Objective of the study was to analyze the physical development versus physical fitness progress profiles of the 5–17 year–old residents of Irkutsk city in East Siberia.

Methods and structure of the study. We sampled for the study 10,618 Irkutsk residents (including 1,580 preschoolers, 3,211 schoolchildren and 5,827 female university students) and tested the sample as provided by the valid national test/ monitoring procedures and practical recommendations [1, 4, 9, 10]. The tests produced the anthropometric data (body length, body mass, chest size), physiological test rates (vital capacity, carpal dynamometry, Martine–Kushelevsky test), physical health test rates and physical fitness test rates. The preschoolers' physical fitness was tested by sit and reach, 30m sprint, standing long jump, 30s sit–up tests; and the schoolchildren/ university students' physical fitness was tested by the shuttle sprint, bent–arms hang, pull–ups, sit and reach, 30s sit–ups, 1000m race, 20/30m sprint and standing long jump tests, plus bench press and push–ups tests. The test data were processed by the variation statistics method to produce the absolute values plus the yearly progress rates for each of the physical health tests, with the 3%, 8% and 8%–plus yearly progresses rated as low, moderate and high.

Results and discussion. As far as the physical development rates of the 5–7 year–olds are concerned (Table 1), we should note the high age–unspecific yearly growth of body length, vital capacity, chest size and Martine–Kushelevsky test rates; whilst the body mass yearly growth rates were found to reach their maximums by 6 years of age – in contrast to the other age groups tested with the slower body mass growth.

Right/ left hand strength yearly growth rates were tested the highest in the 5 year old boys; and left hand strength growth rates the highest in the 7 year old girls; whilst the other age groups' yearly progresses in this test varied in a wide range on a gender – unspecific basis. The trunk muscle strength rating 30s sit – up test showed the highest yearly progress in the 6 year old girls, with the boys' progresses taking longer time. In the standing long jump test, the highest age – unspecific progress was found at 5 years of age and lowest at 7 years of age.

The speed rating 30m sprint test found the yearly peak achieved by 5 years of age in the boys' group (1.8s per year) and 6 years of age in the girls' group (1.3s per year). The sit and reach test showed the moderate yearly progress achieved by 6 – 7 years of age in the boys' group (0.6cm per year) and highest by 6 years of age in the girls' group.

The above 8 – 17 year – olds' physical development and physical fitness yearly progress rates show a few age – specific peaks. Thus the girls' physical development peaks at 12 – 13 years of age, and physical fitness at 9 – 11 and 14 – plus years of age; whilst the boys' physical fitness and physical development growth rates are the fastest at 14 – plus and 13 – 15 years of age, respectively. The senior (university student) girls' anthropometric characteristics

Table 1. *5-7 year-olds' physical development and physical fitness yearly progress rates*

Gender, age Test rate	Girls			Boys		
	5	6	7	5	6	7
Body length, cm						
Body mass, kg						
Chest size, cm						
Vital capacity, ml						
Martine – Kushelevsky test, s						
Right hand strength, kg						
Left hand strength, kg						
30s sit – ups, count						
Standing long jump, cm						
30m sprint, s						
Sit and reach, cm						

Note: white, grey and black boxes indicate the low, moderate and high yearly progress rates, respectively

Table 2. *8-17 year-olds' physical development and physical fitness yearly progress rates*

	Test rate	Age, years									
		8	9	10	11	12	13	14	15	16	17
girls	Body length, cm										
	Body mass, kg										
	Chest size, cm										
	Vital capacity, ml										
	Right hand strength, kg										
	Left hand strength, kg										
	Martine – Kushelevsky test, s										
	Bent – arms hang, s										
	30s sit – ups, count										
	Standing long jump, cm										
	30m sprint, s										
	Shuttle sprint, s										
	Sit and reach, cm										
	1000m race, s										
boys	Body length, cm										
	Body mass, kg										
	Chest size, cm										
	Vital capacity, ml										
	Right hand strength, kg										
	Left hand strength, kg										
	Martine – Kushelevsky test, s										
	Pull – ups, count										
	30s sit – ups, count										
	Long jump (cm)										
	Standing long jump, cm										
	30m sprint, s										
	Shuttle sprint, s										
	Sitting front lean, cm										

Note: white, grey and black boxes indicate the low, moderate and high yearly progress rates, respectively

(body length, chest size) stay virtually the same being genetically predetermined, whilst the body length still grows by 2.2cm by 19 years of age i.e. the body growth continues.

The senior girls' physical development and physical fitness rates typically still grow in the 17–18 year period and fall in the 19–21 year period that may be due to the time limitation of the academic Physical Education classes (2 times a week for the 17–18 year-olds and once a week for the 19–21 year olds) and, hence, the relatively lower physical activity of the senior students in the academic hours.

The study found a few physical development versus physical fitness correlations in the age groups (preschoolers, schoolchildren and university students) at the early stages of ontogenesis. Thus the preschool group (see Table 1) showed virtually no differences in the physical development progress rates, whilst the physical fitness progress rates were tested the highest at 6 and 5 years of age in the boys' and girls' groups, respectively. The physical fitness / physical development progress rates were found the highest for the school period (Table 2), with the girls and boys tested with the highest physical development progresses at 12–13 and 14–15 years of age, respectively (that means a one–two year delay for the boys). The physical fitness progress rates in the girls' group were the highest at 9–11 and 14–plus, and in the boys' group at 8–11 and 14–plus year periods.

It should be noted that the boys' physical fitness progress takes a longer time, particularly in 14–plus year period, and the 12–year point may be considered a critical time when the physical development / physical fitness progress stalls and recovers at a slow pace by 13 years of age in the both gender groups. The physical development progress slows down (and never reaches maximums) after 15 and 17 years of age in the girls' and boys' groups, respectively.

The university girls group showed no fast variations in the physical development / physical fitness progress rates, and their anthropometric characteristics may still slowly grow (with the physical development process basically coming to an end) with some progress in the physical qualities. The physical fitness rates normally grow in the 17–18 year-olds trained twice a week in the regular Physical Education classes and fall in the 18–20 year olds due to the physical education service being limited by one class a week. The study data demonstrate the need in the young people's yearly physical development / physical fitness progress rates being tested and analyzed for the physical education service being reasonably customized and individualized as required by the physical progress data.

Conclusion. The 5–17 year-olds physical development / physical fitness progress rating tests and analyses make it possible to assess their physical health standards and physical development and fitness regularities and potential disorders to improve and customize the physical education and sports services as required by the students' morphologies and functionalities on an age- and gender-specific basis.

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UNIVERSITY STUDENTS' ETHNICITY-SPECIFIC PHYSICAL DEVELOPMENT AND PHYSICAL FITNESS RATING STUDY (CASE STUDY OF CENTRAL RUSSIA)

UDC 796.012

PhD, Associate Professor **V.Ya. Zhigalo**[1]
Dr. Biol., Professor **F.B. Litvin**[2]
PhD, Associate Professor **T.A. Bulavkina**[1]
PhD, Associate Professor **I.A. Dubogryzova**[1]
PhD, Associate Professor **O.N. Shkityr**[3]
[1]Bryansk State of Engineering and Technology University, Bryansk
[2]Smolensk State Academy of Physical Culture, Sports and Tourism, Smolensk
[3]Bryansk State University named after Ivan G. Petrovsky, Bryansk

Corresponding author:
zhigalo@icloud.com

Annotation

Objective of the study was to identify the levels of physical development and physical fitness of the 18-25 year-old students trained in different climatic geographic conditions.
Methods and structure of the study. The body component composition was determined using the impedance method. The level of physical development was evaluated based on the generally accepted parameters. The physical fitness rates were determined in the "field" tests.
Results of the study. The study showed that it is the Africans who have the greatest tension of chronoadaptation. They differ by the statistically significantly low body mass rates, low free and visceral fat mass rates, and high free water contents. Their physical development is characterized by the statistically low rates of body length, wrist dynamometry, chest circumferences at inhalation and exhalation, as well as low strength rates of physique with regard to EI. As opposed to the Slavs and Asians, the Africans have the weakest strength, speed-strength and coordination abilities. The Asians are distinguished by the significantly high muscle mass rates, visceral fat mass rates, and EI. The Slavs have the highest rates in terms of body length, free fat contents, left and right hand dynamometry, EI, as well as the strongest strength, speed-strength and coordination abilities.
Conclusion. In the Slavs and Asians, the average body mass rate does not differ statistically significantly. Secular changes in the somatic status of young males residing in different areas vary due to the effects of environmental factors.

Keywords: *ethnic group, body composition, university students, physical development, physical fitness.*

Background. Health protection and improvement models are given a special priority by the academic education system among the other social progress and well-being securing factors. Modern multiethnic student communities with the inflows of people from all over the world are exposed to the natural age- and adaptation-specific mental and emotional stressors, whilst the non-resident ethnic groups have to face in addition a variety of climatic/ geographic and environmental challenges particularly stressful for their chrono-adaptation bodily mechanisms [1, 3]. Anthropometric, physical and mental progress studies on an ethnicity- and origin-specific basis may contribute to the efforts to put on a sound theoretical and practical basis the academic health protection, performance improvements and disease prevention services [2].

Objective of the study was to rate the 18-25 year-olds physical development versus physical fitness progresses on an ethnicity/ origin specific basis.

Methods and structure of the study. We sampled for the study (run in January to February 2019) the 1-2-year students (n=90) of Bryansk State of Engineering and Technology University and Petrovsky Bryansk State University and split them up the into the following provisional ethnic groups: Slavs (from the Bryansk, Kaluga, Oryol, Smolensk and Tula regions, n=27), Asians (Turkmenistan and Uzbekistan nationals, n=34) and Africans (from Congo, Mali, Guinea and Cфte d'Ivoire, n=29).

The physical development was rated by the common tests including body mass and length, chest size (on inhale, exhale and pause)/ chest excursion tests; Erismann index, ponderal index and arm strength tests. We used a Tanita system to rate body composition; and DK-50 dynamometer for the carpal strength tests. The physical fitness was tested by the arm strength rating pull-ups; speed-strength rating standing long jump; trunk strength rating 1-min sit-ups; coordination and speed qualities rating 3x10m shuttle sprint; and the flexibility rating sitting front lean (on a gymnastic bench) tests.

Results and discussion. The body mass and composition tests found the Slav and Asian group differences being statistically insignificant, whilst the African group body mass

Table 1. *Ethnic group specific physical development and physical fitness test rates (M±m)*

Tests	Ethnic groups			p<0.05
	Slavs	Asians	Africans	
	1	2	3	
Physical development				
Body length, cm	180,17±1,9	175,45±1,87	171,50±1,80	1:3
Body mass, kg	76,32±2,95	75,62±2,42	68,55±2,01	1:3; 2:3
Body mass index, BMI	25,18±1,23	23,84±1,04	22,13±0,86	1:3
Right hand strength, kg	47,83±2,60	43,36±3,53	34,00±1,51	1:3; 2:3
Left hand strength, kg	40,33±2,45	44,27±2,52	36,88±1,82	2:3
Erismann index, points	7,71±1,67	10,63±1,73	3,06±0,39	1:3; 2:3
Arm strength index, points	63,31±2,22	57,10±1,87	54,65±1,53	1:2; 1:3
Ponderal index, points	13,02±0,84	14,28±1,26	14,72±1,33	
Body composition				
Free fat	22,40±3,10	16,12±1,78	13,80±1,23	1:3; 2:3
Free water	57,23±2,19	59,99±1,30	62,40±1,43	1:3
Muscle mass	56,19±1,60	60,29±2,32	55,75±1,48	
Bone mass	2,87±0,11	3,16±0,11	3,80±0,16	
Visceral fat rate	2,83±0,53	3,73±0,74	2,00±0,25	1:3
Physical fitness				
3x10m shuttle sprint, s	7,07±0,10	7,91±0,20	8,04±0,29	1:2; 1:3
Standing long jump, cm	231,25±4,85	231,82±4,32	218,13±3,77	1:3; 2:3
1–min sit–ups, count	47,08±2,00	42,91±2,51	38,00±2,01	1:3
Pull–ups test, count	11,09±1,57	7,73±1,43	4,38±0,92	1:3; 2:3

was 11.3% and 10.3% lower than that in the Slav and Asian groups, respectively (p<0.05): see Table 1 hereunder.

The BMI was found to vary within the upper range of the norm for Slavs and Asians and lower range of the norm for Africans. The body composition was found dependent on the climatic/ geographic living conditions in the countries of origin. Thus the Africans were tested with the significantly lower fat masses – 62.3% and 16.8% lower than in the Slav and Asian groups, respectively (p <0.05); and minimal visceral fat masses – 86.5% and 31.8% lower than in the Asian and Slav groups, respectively (p <0.05), with the differences explainable by the traditional ethnicity– and origin–specific diets and preferences. Thus the daily calorific value of an Asian diet was found 11.2% and 47.7% higher than the Asian and Slav diets, respectively (p <0.05). The relatively high calorific value of the African diet may be indirectly indicative of the stressful functionality that claims a higher energy cost coverable by the food macroergs.

The climatic/ geographic differences of the countries of origin indirectly manifested themselves in the inter–group body water mass (BWM) differences. Thus the African group BWM was tested 9.0% (p <0.05) and 4.0% (p> 0.05) higher than the Slav and Asian group BWMs. The muscle mass was the highest in the Asian group: 7.3% and 8.1% higher than in the Slav and African groups, respectively (p> 0.05); whilst the bone mass index in the African group was 20.3% and 32.4% higher than in the Asian and Slav groups, respectively (p <0.05). The carpal strength tests found maximums in the right–hand strength in the Asian and left–hand strength in the Slav groups; with the Asian group left–hand strength tested 10.0% and 18.9% higher than in the Slav and African groups, respectively (p <0.05). The Slav group right hand strength was tested 10.3% and 40.7% higher than in the Asian and African groups, respectively (p <0.05). The arm strength index was the highest in the Slav group (63±3%) followed by the Asian group arm strength index (57±3%) and African group arm strength index (54±2%) (p <0.05). It should be mentioned that the tests found virtually no differences in the right/ hand arm strength rates in the Asian and African groups.

The physical fitness test rates were the highest in the Slavs group followed by the moderately–rated Asian group and lowest–rated African group. The difference may be due to, among other things, the challenges of the group adaptation to the unusual climatic/ geographic and social environments. Moreover, the differences were minimal in the strength and speed–strength tests. Thus in the pull–ups tests the Slavs were 43.5% and 153.2% better than the Asians and Africans, respectively (p <0.05). In the endurance rating 1–min sit–ups test, the Slavs were 9.7% and by 23.9% better than the Asians and Africans, respectively (p <0.05). In the coordination qualities rating test, the Africans were 13.7% and 11.9% lower than the Slavs and Asians, respectively (p <0.05). And the flexibility tests found no meaningful intergroup differences with a somewhat better progress trend in the African group.

Conclusion. The study data and analysis found a few statistically significant ethnic–group–specific differences in the 18–25 year–olds' physical development and physical fitness test rates.

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NEW MOTOR COORDINATION SKILLS TRAINING MODEL FOR BACHELOR STUDENTS OF PEDAGOGICAL UNIVERSITY

UDC 796.011.3

Dr. Hab., Associate Professor **V.L. Botyaev**[1]
PhD, Associate Professor **V.N. Boyko**[1]
Postgraduate student **S.V. Botyaev**[2]
[1]Surgut State Pedagogical University, Surgut
[2]North Kazakhstan State University named after Manash Kozybayev, Petropavlovsk, Kazakhstan

Corresponding author:
vl_bot53@mail.ru

Annotation

The article analyzes the issue of motor coordination of bachelor students of a pedagogical university. For the recent years, there has been a tendency towards a decrease in this component of physical fitness. The authors state that introduction of sports and subject-matter disciplines into the process of education of bachelor students of the Physical Education Department no longer contributes to the improvement of the results of coordination training. All this requires and justifies the need for the development of special elective courses focused primarily on coordination training. To solve this problem, the authors developed and introduced into the educational process the following elective courses: "Coordination abilities and their importance in sports"; "Modern youth movements in physical culture"; "Acrobatic training as a coordination training area".
Implementation of these courses by the method of stimulated development indicates a significant improvement of the results of coordination training of bachelor students.

Keywords: *motor coordination training, motor coordination skills, test, elective course, bachelor students.*

Backgroun. Issues of motor coordination training service for the Physical Education specialty in the academic Pedagogical Education curriculum have been in more and more priority for the last few years [1–3]. Reasons for the growing interest may be classified into objective and subjective ones, although the researchers tend to rank the rapidly expanding physical inactivity of the young population on top of these reasons [4]. It should be mentioned that even the sporting youth communities nowadays are tested with poor sport-specific motor coordination skills. The national academic community reports rapid regresses in the numbers of students equally successful in every academic sport discipline. The ongoing regress in the students' motor coordination skills forces the universities to ease the graduates' professional physical fitness standards and requirements. Thus the academic Physical Education curricula no more require the students have Class I–III qualifications in the academic sports disciplines as it was before, and the only explanation for the revision is that the students fail to qualify and meet the former standards due to the regress in their physical qualities, motor skills and fitness. As was found by our prior studies [2], most challenging for the modern student population are the motor coordination skills tests – that rate most of the tested students low or moderate on the motor coordination skills test scales. All these considerations make the motor coordination studies and progress systems so relevant for the bachelor training curricula.

Objective of the study was to analyze benefits of a new motor coordination skills training model with elective modules for the bachelor students majoring in Physical Education in the academic Pedagogical Education curriculum.

Methods and structure of the study. Benefits of the new training model for the 1–3-year bachelor students were tested by a model piloting exepriment with the pre- and post-experimental tests to rate the sample progress in the motor coordination skills and qualities: see Table 1.

The motor coordination skills were rated by the following 12 standard tests that have been used for many years in the academic studies and research projects in the academic sports disciplines. The test set includes both the traditional and computerized motor skills diagnostic tools including NS Psychotest, Sports Psycho-physiologist probes etc. – that have been proved dependable and informative by the prior studies:

1. Schulte–Platonov Red–black Tables test;
2. RMO (reaction to a moving object) test;
3. Hand tapping test;
4. Foot tapping test;
5. Angular velocity rating test;
6. Jumping rhythm keeping test;

7. Point – to – point (1 – 12) sprint test;
8. Reverse all – fours movement test;
9. Hand – swing – assisted/ non – assisted jump test;
10. Maximal – twist jump test;
11. Maximal – repetition standing long jump test; and
12. Three 360ö turns on a gymnastic beam test.

The 1 – year versus 3 – year group motor coordination progress tests found no progress for the 5 semesters, with both of the groups tested virtually even in the tests, save for only a few tests where the 3 – year group had a statistically insignificant edge ($p>0,05$). The failure of the academic Physical Education service to secure progress in the motor coordination skills tests urged us to develop and test a new motor coordination skills training model including the following optional modules: (1) motor coordination skills training benefits for sports; (2) Modern trends in youth physical education and sports; and (3) motor coordination skills training actobatics. The new motor coordination skills training model was piloted in semesters 6 – 7 after the academic sports training were completed and, hence, benefits of the new optional sports training model could be tested on a relatively independent basis.

The 'motor coordination skills training benefits for sports' module was designed to give basics of the motor coordination skills theory and concepts to students with motor coordination classification; sports – specific benefits; motor coordination skills progress test systems; sports – specific motor coordination skills training methods and tools; and practically train the students to apply the modern motor coordination skills training and progress test toolkits.

The 'motor coordination skills training actobatics' module may be described as the practice – prioritizing course to help students master acrobatic elements with a special emphasis on the sport – specific motor coordination skills developing aspects. The module is designed to rather complement than duplicate the academic 'Gymnastics with the training methodology' discipline. The practices include special trampoline exercises, elementary jump acrobatics and an extensive course of group acrobatics (deuces, triples, fours and pyramids). It should be mentioned that the module trainings are highly intensive, emotional and encouraging the trainees' initiative and creativity.

And the 'Modern trends in youth physical education and sports module was designed to meet the students' enthusiastic interest in a few modern street sports like parkour, freerun, acrostritis, workout, etc., closely familiarize them with them and help them safely test own gifts and skills in some of them on their discretion. Trainings in this module were assisted by special equipment and appliances to make the classes more interesting and entertaining.

Table 1. *Pre-experimental 1- and 3-year student group motor coordination skills test data*

Tests	1-year group X±σ	3-year group X1±σ1	p
Schulte – Platonov Red – black Tables	38,6±7,13	37,8±6,32	>0,05
Response to a moving object	0,218±0,04	0,221±0,05	>0,05
Hand tapping	406±57,3	414±62,5	>0,05
Foot tapping	357±63,8	382±57,6	>0,05
Angular velocity rating	4,1±0,83	4,3±0,75	>0,05
Jumping rhythm keeping	0,47±0,11	0,44±0,08	>0,05
Point – to – point (1 – 12) sprint	32,8±7,42	30,5±6,37	>0,05
Reverse all – fours movement	4,35±0,76	4,67±0,64	>0,05
Hand – swing – assisted/ non – assisted jump	8,4±1,78	9,7±1,52	>0,05
Maximal – twist jump	412±63,2	435±58,2	>0,05
Maximal – repetition standing long jump	5,6±1,04	7,2±0,86	>0,05
Three 360ö turns	7,24±1,42	7,35±1.38	>0,05
Total motor coordination skills rate	67,8±13,7	68,3±15,2	>0,05

Table 2. *Pre- versus post-experimental test rates of the sample in the new elective motor coordination skills training model piloting experiment*

Tests	Pre-exp. X±σ	Post-exp. X1±σ1	p
Schulte – Platonov Red – black Tables	37,8±6,32	35,4±5,27	>0,05
Response to a moving object	0,221±0,05	0,213±0,04	>0,05
Hand tapping	414±62,5	438±53,8	>0,05
Foot tapping	382±57,6	422±42,8	<0,05
Angular velocity rating	4,3±0,75	4,1±0,57	>0,05
Jumping rhythm keeping	0,44±0,08	0,35±0,05	<0,05
Point – to – point (1 – 12) sprint	30,5±6,37	24,7±5,78	<0,05
Reverse all – fours movement	4,67±0,64	4,23±0,53	>0,05
Hand – swing – assisted vs. non – assisted jump	9,7±1,52	12,4±1,34	<0,05
Maximal – twist jump test	435±58,2	528±58,2	<0,05
Maximal – repetition standing long jump	7,2±0,86	9,6±0,67	>0,05
Three 360ö turns	7,35±1.38	5,18±0.87	<0,05
Total motor coordination skills rate	68,3±15,2	87,5±11,4	<0,05

Every module of the new motor coordination skills training model took 72 hours (2 credits), with 2–3 training sessions a week for 1 semester of the experiment.

Results and discussion. The post–experimental tests showed benefits of the new motor coordination skills training model for the bachelor students as the sample showed progress in virtually every test versus the pre–experimental test rates, with particularly high progresses made in six motor skill tests. The computerized tests showed lower progress rates, with the statistically significant pre– versus post–experimental test differences. On the whole, most of the sample was tested with the highest progresses in the elementary and total motor coordination skills test rates falling within the moderate and high motor coordination fitness ranges: see Table 2.

Conclusion. The new motor coordination skills training model for the bachelor students piloted as complementary to the standard physical education service curriculum was found beneficial as verified by the pre– versus post–experimental motor coordination skills progress rating tests. The new motor coordination skills training model is recommended for application in the academic physical education service by pedagogical universities as a promising tool to facilitate the students' progress in the professional competences.

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INFORMATION AND COMMUNICATION TECHNOLOGIES TO FACILITATE ADDITIONAL PHYSICAL TRAINING AND SPORTS ACTIVITIES OF STUDENTS ON MOTIVATIONS-SENSITIVE BASIS

UDC 796.011.3

PhD, Associate Professor **E.V. Gavrishova**[1]
PhD, Associate Professor **A.S. Grachev**[2]
PhD, Associate Professor **A.A. Tretyakov**[3]
[1]Belgorod Institute for Educational Development, Belgorod
[2]Belgorod State Technological University n.a. V.G. Shukhov, Belgorod
[3]Belgorod Law Institute of the Ministry of Internal Affairs of Russia named after I.D. Putilin, Belgorod

Corresponding author:
gavrishova.alena@gmail.com

Annotation

Objective of the study was to identify the effects of information and communication technologies on additional physical training and sport activities of students with different types of motivation: to achieve success or avoid failure. Sampled for the study were the 1st- and 2nd-year students (n=160, including 80 males and 80 females) of Belgorod State National Research University, Belgorod State Technological University named after V.G. Shukhov, Belgorod Law Institute of the Ministry of Internal Affairs of the Russian Federation named after I.D. Putilin. The article considers the qualitative indicators of health and motor activity of the students with motivation to achieve success or avoid failure and suggests the ways to organize additional physical education classes with the use of information and communication technologies.

It was proved that effective application of information and communication technologies in independent recreational activities of students is possible provided that individual characteristics of their motivation are taken into account. It is important to determine which exactly gives an impulse to independent physical education activities: the desire to achieve success or avoid failure. It was found that information and communication technologies expand the process of education in general and physical training process in particular, define the content of motor activity, and enable to organize in the shortest time possible the assessment of the work performed, process the monitoring results.

Keywords: *information and communication technologies, health, success motivations, failure avoidance motivations, complementary physical trainings and sports for health, physical education.*

Background. It is traditional and habitual for the modern students to use computers, peripherals and mobile equipment for education and data exchange purposes as natural as their parents have used pens and notebooks. These mobile information and communication technologies, however, are known to be among the key factors responsible for the recent youth health deterioration trends. On the one hand, any information on the modern healthy lifestyles, health improvement methods, healthy diets and bad habits is readily available for the information and communication technologies users; albeit, on the other hand, their addiction to the information flows channeled by the digital gadgets keeps them physically inactive and undermines the health standards in every aspect – in the physical progress harmony, physical fitness, physical progress rate and the somatic health on the whole. The valid academic physical education curriculum assigns only two hours a week for the physical education classes, and no wonder that this physical activity is too limited to secure reasonable physical progress and good health. That is the reason why the academic community acknowledges the need for complementary self-reliant trainings on the students' own initiative, free of compulsion and driven by the natural need for movement and individual motivations [1]. Such motivations-sensitive physical education methods shall offer the physical education models and tools customizable to at least the basic success motivations and failure avoidance motivations [3, 4]. Of potential benefits for these models may be the modern information and communication technologies tools to help design and manage the self-reliant complementary physical education and sport trainings for health and effectively test individual progresses in the trainings [2, 5] .

Objective of the study was to analyze benefits of the modern information and communication technologies for the self-reliant student physical education and sport trainings driven by the success motivations and failure avoidance motivations.

Methods and structure of the study. We sampled for the study the 1-2-year students (n=160, 80 males and

80 females) from I.D. Putilin Belgorod Law Institute of the Ministry of Internal Affairs, Belgorod State Technological University named after V.G. Shukhov and Belgorod Institute for Educational Development. Somatic health of the sample was tested by the G.L. Apanasenko scale; physical activity was tested by pedometer systems; and motivations were tested by the T. Ehlers Success Motivation and Failure Avoidance Motivation tests [3].

The sample was informed on the prior test data and offered the following optional self-reliant health physical education groups summoned via the Viber messenger: Beauty and Health group; Weekend Quest group; and Dolphin group. Each of the groups offered its own training model, schedules for outdoor trainings in parks (for Weekend Quest and Dolphin groups), with every group including its success motivated and failure avoidance motivated subgroups and trained by an instructor always ready to help/ consult the trainees. The instructor runs the group exchange to update the teammates on the healthy diets, drinking regimens, healthy sleep and rest regimen, safe food supplements, stress coping methods, etc.; and once a week uploads the training exercises practiced at least 3 times a week. Every trainee is required to report the individual trainings to the group with the videorecords/ selfies for discussion and support. On Saturdays the groups normally gather, on a pre-agreed basis, for the group trainings in parks. The individual progress in the training process is tested using a reference point system by the following tests: physical activity and progress harmony test on a monthly basis; and the somatic health and motivations rating tests once in six months.

Results and discussion. Having analyzed the students' interest in and commitment for the self-reliant information-and-communication-technologies-assisted health/ physical education and sport trainings, we found the success motivated subgroups being more determined than their failure avoidance motivated peers. Thus 56.2% and 58.8% of the success-motivated girls and boys respectively were tested with the high commitment for the trainings at first, although later on 3.7% and 4.4% of them quitted the trainings for the 'lack of willpower'; plus 10% and 10% quitted due to 'inability to combine them with other fitness/ sports group trainings'. As for the failure avoidance motivated subgroups, only 13% and 18.7% of the

Table 1. *Pre- versus post-experimental health/ physical fitness test data of the sample*

Success motivated subgroup						
Tests	**Girls (n=53)**			**Boys (n=62)**		
	Pre-exp.	**Post-exp.**	**p**	**Pre-exp.**	**Post-exp.**	**p**
Somatic health rate on the Apanasenko scale						
Kettle index	16,78±0,71	20,29±0,2	+	18,86±1,3	23,82±0,73	–
Points	–1,29±0,36	–0,08±0,14	+	–1,20±0,49	0,27±0,25	–
Vitality index	53,49±3,46	44,06±3,8	–	62,40±5,01	53,31±4,88	+
Points	1,57±0,43	0,44±0,4	–	1,60±0,87	0,7±0,45	–
Strength index	39,41±1,42	51,41±3,45	+	54,61±3,18	63,17±1,0	+
Points	–0,57±0,2	1,12±0,63	–	–0,60±0,4	0,13±0,33	–
HR recovery time,s	98,57±22,41	91,21±8,1	+	97,50±12,85	60,3±0,15	+
Points	2,71±1,32	3,44±0,77	+	1,60±1,17	5,0±0,12	+
Robinson index	89,34±10,24	80,21±10,1	+	105,22±3,24	86,78±3,72	+
Points	–0,14±0,59	1,01±1,08	+	–1,20±0,2	2,02±1,33	+
Total points	2,29±1,91	5,85±2,12	+	0,20±1,32	8,09±1,28	+
Health level	Low	Sub-mean		Low	Mean	
Physical activity						
Pedometer	7568±231	11728±623	+	9631±298	12879±563	+
Failure avoidance motivated subgroup						
Tests	**Girls (n=27)**			**Boys (n=28)**		
	Pre-exp.	**Post-exp.**	**p**	**Pre-exp.**	**Post-exp.**	**p**
Somatic health rate on the Apanasenko scale						
Kettle index	16,18±0,65	16,7±0,4	–	18,54±1,2	20,25±0,21	–
Points	–1,32±0,43	–1,5±0,13	–	–1,35±0,45	–0,10±0,07	–
Vitality index	52,38±2,56	55,6±1,27	–	60,95±4,21	60,90±0,95	–
Points	1,46±0,44	2,09±0,18	–	1,91±0,97	2,64±0,1	–
Strength index	38,41±1,32	37,63±1,13	–	54,11±3,28	55,92±1,24	–
Points	–0,49±0,31	–0,69±0,08	–	–0,89±0,32	1,46±0,16	–
HR recovery time,s	97,47±12,45	71,81±3,18	+	98,2±10,75	90,00±3,24	+
Points	2,63±1,42	4,21±0,21	+	1,42±1,87	2,67±0,26	–
Robinson index	91,14±9,34	89,51±2,41	–	103,82±5,14	109,2±2,5	+
Points	–0,16±0,49	0,03±0,18	–	–1,56±0,31	–1,00±0,13	–
Total points	2,09±0,91	4,15±0,25	+	0,37±0,12	5,67±0,34	+
Health level	Low	Sub-mean		Low	Sub-mean	
Physical activity						
Pedometer	7645±314	9241±265	+	9478±342	10102±358	+

Note: (+) significance of differences, $p<0.05$

girls and boys respectively were tested fairly committed for the trainings; and 5% and 6.7% of them trained for only a few days and then lost their enthusiasm, stopped sending their training reports and lost contacts with the group instructors. On the whole 16.7% and 12.2% of the failure avoidance motivated girls and boys respectively quitted the information-and-communication-technologies-assisted trainings for the 'lack of time' – i.e. most likely due to the poor self-control and management skills and/ or laziness.

Our main goal in the information-and-communication-technologies-driven training model was to cultivate a highly-motivated need for habitual health/ physical trainings to make sure that every student knows why the work must be done (I want), how (I can), what progress can be made, and what benefits the training bring for the lifestyle and professional progress (I should). Success is achieved where "I want to be healthy and beautiful," "I can achieve this" and "I have to do this for myself, my family, and professional progress" intersect. Success-motivated subgroup will set these goals versus own resource and abilities, look for the ways to attain the goals, persevere, overcome difficulties, enjoy success, cope with the failures, and the progress stimulates them for further trainings. The failure avoidance motivated trainees are not always fair in rating own resource and abilities, tend to set obviously too high goals, and excuse themselves for the failures; or set too easy goals that never yield the progress they expect. Knowing that, the group instructor assists the subgroup on an individual and highly sensitive basis. Thus the group instructor offers the trainees a few options of health/ physical training models to let them feel free do decide on what option better suits their health/ progress agendas. When the option is too strict for customizing/ individualizing, the instructor will make resort to the explanations, suggestions, demands, advises, persuades to ensure the suggested option being accepted as the best choice – to avoid a feel of it being imposed rather than chosen on own discretion, and to ensure due progress motivations.

The pre- versus post-experimental health/ physical fitness tests showed progress of the sample that gives grounds to believe that the new information-and-communication-technologies-driven motivations-sensitive health/ training model is beneficial for the self-reliant physical progress: see Table 1 hereunder

As demonstrated by the Table, the success motivated group was tested with improvements in the somatic health and physical fitness tests. The failure avoidance motivated group was also tested with some progress, albeit its average physical fitness only neared the lower limit of the norm and the somatic health rate was tested to grow only one level up.

Conclusion. The new information-and-communication-technologies-driven motivations-sensitive health/ physical training model was found beneficial as verified by the significant growth of the physical activity with the associating progress on the somatic health scales. It should be emphasized that the new information-and-communication-technologies-driven training model is highly effective for the self-reliant physical education purposes only when highly sensitive to the individual motivations that are recommended to be primarily classified into at least the success motivations and the failure avoidance ones. The study found the success motivated group being fairly active, proactive and enthusiastic in their instructor-assisted health/ physical trainings conditional on the facilitating group climate i.e. friendly and individual needs sensitive attitudes and communication in the group – and they can even become good role models for their failure avoidance motivated peers. The information-and-communication-technologies-driven motivations-sensitive health/ physical training model was found to expand the scope and facilitate the learning process on the whole and physical education in particular, as it helps physically activate the students, help them design and manage their physical progress on a time-efficient basis, record, report and process the physical/ health progress data in the trainings and, hence, step up their physical progress motivations and health agendas.

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PHYSICAL EDUCATION QUALITY DETERMINANTS ACCORDING TO STUDENTS

UDC 37.014:378.4

PhD, Associate Professor **D.N. Koval**[1]
PhD, Associate Professor **R.V. Gziryan**[1]
PhD, Associate Professor **G.V. Shiyanova**[2]
PhD, Associate Professor **A.P. Babchenko**[2]
[1]North Caucasus Federal University, Pyatigorsk
[2]State University, Pyatigorsk

Corresponding author:
lyudmila270965@mail.ru

Annotation

Objective of the study was to identify the levels of physical development and physical fitness of the 18-25 year-old students trained in different climatic geographic conditions.
Methods and structure of the study. The body component composition was determined using the impedance method. The level of physical development was evaluated based on the generally accepted parameters. The physical fitness rates were determined in the "field" tests.
Results of the study. The study showed that it is the Africans who have the greatest tension of chronoadaptation. They differ by the statistically significantly low body mass rates, low free and visceral fat mass rates, and high free water contents. Their physical development is characterized by the statistically low rates of body length, wrist dynamometry, chest circumferences at inhalation and exhalation, as well as low strength rates of physique with regard to EI. As opposed to the Slavs and Asians, the Africans have the weakest strength, speed-strength and coordination abilities. The Asians are distinguished by the significantly high muscle mass rates, visceral fat mass rates, and EI. The Slavs have the highest rates in terms of body length, free fat contents, left and right hand dynamometry, EI, as well as the strongest strength, speed-strength and coordination abilities.
Conclusion. In the Slavs and Asians, the average body mass rate does not differ statistically significantly. Secular changes in the somatic status of young males residing in different areas vary due to the effects of environmental factors.

Keywords: *physical education service, physical education service quality rating, satisfaction with quality, satisfaction markers, physical education service quality determinants, information and communication technologies.*

Background. One of the top priority topics for the education research community is the education service quality, with the modern education service quality expected being competitive on the global markets for the top-priority national strategic human resource policy goals being attained [5] among the other key education service pillars including the service accessibility, mobility. interdisciplinary design etc. The still inconsistent interpretation of the education service quality concept may be explained by the following key factors as provided by D. Adams [15]: (1) multidimensionality and dynamism (in timing and contextual terms) of the concept; (2) plurality of interpretations that may imply the national/ communal or individual values; (3) the concept may be spelled out in the quantitative or qualitative criteria; 4) the quality-related goals may come in conflict with the efficiency, fairness etc. related ones.

It is obvious in this context that every actor of an education service system may come up with its own set of education service quality determinants/ markers/ satisfaction rating criteria [14], i.e. every actor may have a different view on the education service quality standards and, hence, the education service quality improvement issues. We believe, however, that a decisive role in the education service quality rating (i.e. the education background with the theoretical and practical competences and skills) efforts will be given to students [11]. Having analyzed the national and foreign study reports with concern to the factors of influence on the individual/ communal satisfaction with the education service quality standards, we found a wide range of approaches to the education service quality rating criteria – that still largely fail, however, to assess the education service quality from the viewpoint of the education service consumer [1-4,6-9].

Objective of the study was to find the education service quality rating criteria/ determinants based on the students' education service quality satisfaction survey.

Methods and structure of the study. The students' satisfaction survey was run in February to March 2019 on a sample of 1-4-year bachelor students (n=1230) from the following Pyatigorsk-based higher education es-

tablishments: Pyatigorsk State University; North Caucasus Federal University; Service and Technology Institute; Service, Tourism and Design Institute; the Plekhanov Russian University of Economics Affiliate. The survey form included direct ('projective') and indirect questions to rate the following physical education service quality aspects/parameters: (1) degree of satisfaction with the physical education service quality on a 5-point scale; (2) factors of influence on the physical education service quality satisfaction; (3) physical education service quality improvement actions recommended by the respondents; and (4) qualities, skills and other credential of an ideal teacher.

For the survey data processing purposes, we used a few categories to facilitate the content analysis, semantic interpretations, graphical presentations and rankings of the survey data. It should be mentioned that we used a combined sample including respondents from a few age groups.

Results and discussion. We ranked the determinants/criteria to rate the university competitiveness on the modern education service markets within the relevant service limits ('frontiers') and students' satisfaction ranges as presented on Figure 1 hereunder

As demonstrated by Figure 1, 45.2% of sample gives a special priority to the practical knowledge and skills provided by the academic education service. Given on Figure 2 hereunder are the quality scores of the knowledge and skills provided by the universities, on a 5-point scale.

Furthermore, we tried to find the potential ways for the education service quality improvement by surveying the sample on the education service quality improvement actions they would recommend to cope with the existing problems and secure the service progress: see Figure 3.

The survey data show a high demand for the modern information and communication technologies that could, in opinion of the respondents, decisively improve the education service quality standards. It is also clear that the students give a special priority to the personal credentials of the faculty on the whole and physical education service

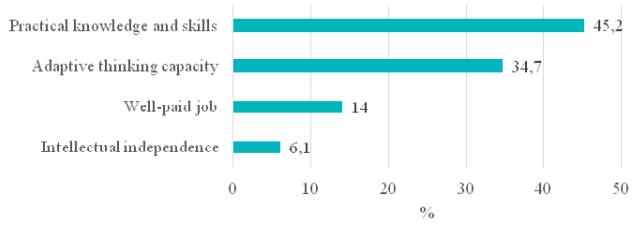

Figure 1. *Distribution of the competences ideally secured by a high-quality education service as reported by the sample %*

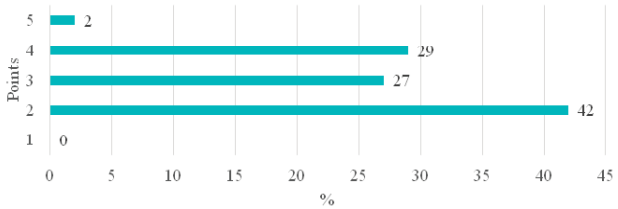

Figure 2. *Quality scores of the knowledge and skills provided by the universities, points on a 5-point scale versus % of the sample*

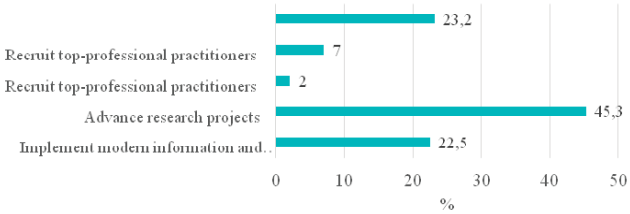

Figure 3. *Physical education service quality improvement actions recommended by the sample, %*

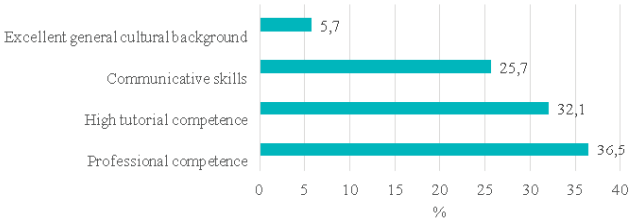

Figure 4. *Ideal teachers' credentials to secure the education service quality standards, %*

faculty in particular reporting the need for the top-professional practitioners (22.5% of the sample). The teacher's personality determinants are viewed as dominated by the professional qualities (36.5%) and pedagogical competency (32.1%): see Figure 4.

The survey data demonstrate that the education service quality standards will be secured, in opinion of the sample, by the highly competent faculty having high professional, tutorial and communicative competencies. Therefore, we would recommend giving a special priority in the human resource recruitment process to the candidate teachers' portfolios and the competence assurance credentials.

It should be emphasized that the survey revealed highly pragmatic attitudes of the sample to the practical physical education service knowledge and skills expected from the education service – in view of the growing competition in the social environment on the whole and on the labor markets in particular – that might be the prime reason for the students' growing demand to the practical aspects of the education service quality standards. Being on the forefront of the modern information and communication technologies, the students demonstrate the natural need for the education service digitalization in every institutional aspect. The academic communities need to meet this demand by the persistent efforts to facilitate the education service by the top-notch information and communication technologies to put their universities in better competitive positions on the modern education service markets and secure their progresses in a long run.

Conclusion. The students satisfaction survey data, analyses and findings may be of special practical interest for the relevant education service contributors including the university management, education service quality assurance personnel, human resource service management officers and other faculty members. We believe that further research of the academic education service quality from the standpoint of the 'end consumer' of the service is of high promise of the education service quality improvement initiatives.

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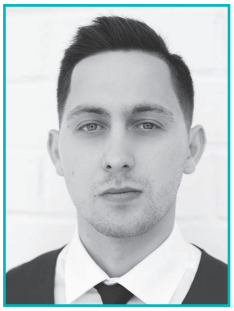
"FROM PHYSICAL EDUCATION CREDIT TO GTO BADGE" PROJECT: STUDENTS' MOBILIZING MODEL AND PROGRESS ANALYSIS

UDC 796.011.3



Postgraduate student **I.D. Kharisov**[1]
PhD, Associate Professor **I.N. Nikulin**[2]
PhD, Associate Professor **A.V. Voronkov**[2]
PhD **V.A. Malakhov**[2]
[1]South Ural State National Research University, Chelyabinsk
[2]Belgorod State National Research University, Belgorod

Corresponding author:
ki_sport@mail.ru

Annotation

Objective of the present study was to analyze the involvement of students in the social project "From Student Credit to GTO Badge" and assess their fitness level.
Methodology and organization of research. 36 102 students (52% boys, 48% girls) from 226 universities of Russia from 65 subjects of the Russian Federation took part in the project.
To assess the level of physical fitness, the authors used an easier form of the physical fitness testing "From Student Credit to GTO Badge", focused on the wide coverage of students and the state of the sports infrastructure of Russian universities.
The article contains an analysis of the All-Russian Sports Competition "From Student Credit to GTO Badge", which provides for training of 17-28 year-old students in order for them to pass the standard tests of two difficulty levels: to qualify for the Gold and Silver Badges of the All-Russian Physical Culture and Sports Complex "Ready for Labor and Defense". To get a Student Credit, it is necessary to pass at least five tests for the relevant qualifying standard that help evaluate the level of development of speed, coordination, strength abilities, and flexibility. A distinctive feature of the Project is its simplified format as compared to the All-Russian Physical Culture and Sports Complex. In the first season, the Project involved a total of 36,102 students from 226 universities and 65 territorial entities of the Russian Federation. It was found that 14.5% of students were able to qualify for the GTO Gold Badge and 19.85% - for the GTO Silver Badge. The Central Federal District was the first in the number of successful qualifiers for the Badges, the North Caucasian Federal District – in the percentage of badge holders from the total number of participants. Belgorod State National Research University and Tyumen State Oil and Gas University took the lead in the number of participants.

Keywords: *Russian 'Ready for Labor and Defense' GTO Complex, tests, Association of Student Sports Clubs of Russia, physical education, physical fitness, healthy lifestyle.*

Background. The Russian 'Ready for Labor and Defense' GTO Complex reinstatement project has evolved into one of the key drivers for the national healthy lifestyle cultivation initiatives and popular physical progress movements and projects [3].

Presently the national physical education community explores the ways to popularize the GTO Complex and associating projects including the relevant competitive events [1,2]. One of such initiatives is the "From Physical Education Credit to GTO Badge" Project that is the national physical education tournament for the 17–28 year old students in the GTO–test–compliant events with the difficulty levels matching the GTO Gold and Silver Badge standards.

The "From Physical Education Credit to GTO Badge" Project was launched in the academic year 2018–19 to offer the university–level, regional and federal events. The university events were organized by the Association of Student Sports Clubs supported by the university management and designed to: encourage the students' competitions with qualifications for the GTO–compatible tests; select the best prospects for the university teams for the higher–level Association of Student Sports Clubs Project competitions; and encourage and decorate the leading academic communities (institutes, divisions, schools, hostels, academic groups etc.) for accomplishments in the Project.

Objective of the study was to analyze progress of the students' mobilizing for the lower (university) level national "From Physical Education Credits to GTO Badge" Project events and their fitness for the regional events.

Methods and structure of the study. We sampled for the first season of the Project 36,102 students (52% male

and 48% female sample) from 226 national universities in 65 regions of the Russian Federation. Physical fitness of the sample was rated by a simplified version of the "From Physical Education Credits to GTO Badge" Project geared to encourage broad committment of the student communities for the competitive events wherever the elementary academic physical education and sportassets and infrastructure is available. The simple test set was designed to rate the core physical fitness qualities namely speed, coordination, strength and flexibility. Competitors were required to succeed in at least five of the standard tests to qualify for the Association of Student Sports Clubs Gold or Silver Class certificate.

The only difference of the Project tests from the standard age-specific GTO Complex tests is that the Project tests are simpler and, e.g., exclude the most challenging 2/3km race test; albeit the physical fitness tests are complemented by the physical development and theoretical knowledge tests. Successes in these three test components were acknowledged by formal "I am in sports" Association of Student Sports Clubs Class I/ II certificates depending on the total points scored in the tests. One more difference of the Association of Student Sports Clubs -sponsored Project tests is that there is no need to mobilize special referees from the GTO Complex test centers since the physical fitness tests may be run by the academic physical education specialists or student volunteer activists. The simplification makes it possible to expand the range of test formats to include leisure-time group tests, team competitions in the Physical Education tests, mass tests in the Physical Education classes and some other test models.

The "From Physical Education Credit to GTO Badge" Project was organized by the Association of Student Sports Clubs of Russia and the Sports and Social Projects Directorate in charge of the national GTO Complex Project in partnership with the Ministry of Sports, Ministry of Science and Higher Education, and the Russian Union of Rectors.

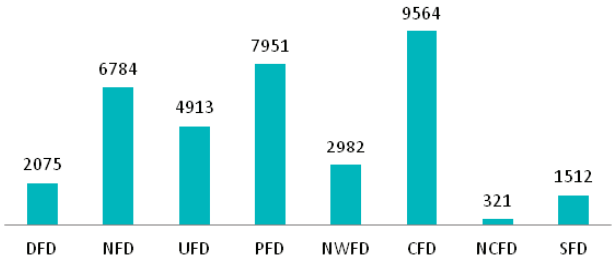


Figure 1. *Project competitors classified by the federal regions, people*

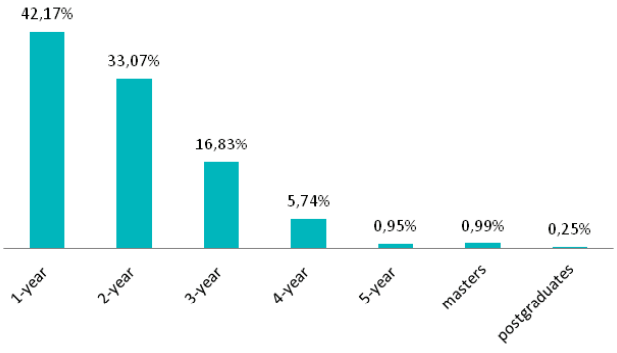


Figure 2. *Project competitors classified by the age groups, %*

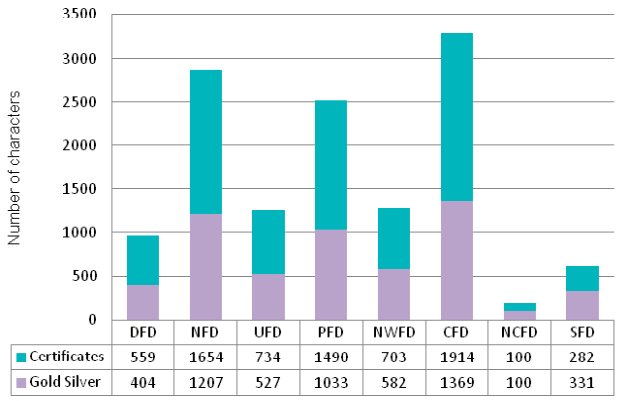


Figure 3. *Association of Student Sports Clubs Gold and Silver Class certificates classified by the federal districts,*

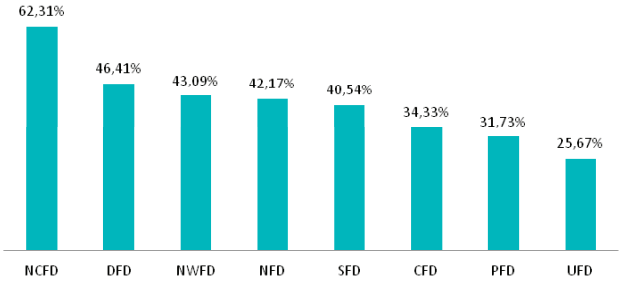


Figure 4. *Breakdown of the successful competitors in the 'From Physical Education Credit to GTO Badge' events by the federal districts, %*

Results and discussion. Given on Figures 1 and 2 here-under are the student competitors in the Project classified by the federal regions and age groups. Dominating in the university-level Project events were the CFD competitors (n= 9564). Leading among the universities were Belgorod State National Research University and Tyumen Industrial University (n=1567 each) followed by Ural State University of Economics (n=1268). Kazan National Research Technical University named after A.N.Tupolev came up with more than 1000 competitors. It should be mentioned that the Project competitors were dominated (42,17%) by the 1-year students: see Figure 2.

Based on the Project tests, 5236 (14.5%) and 7166 (19.85%) of the sample successfully qualified for the Association of Student Sports Clubs Gold and Silver Class certificates, respectively, and 23,700 (65.65%) failed in the tests. Most successful in the Association of Student Sports Clubs tests were the Central Federal District students (Figure 3), although the North Caucasus Federal District leaded in the numbers of certificates won (Figure 4).

Conclusion. 36 102 students from 226 Russian universities have joined the national 'From Physical Education Credit to GTO Badge' Project competitions for the study period, and 34.35% of them succeeded in the tests to qualify for the Association of Student Sports Clubs Gold and Silver Class certificates. Leading in on the team scoreboard was the CFD team, whilst the Belgorod State National Research University and Tyumen Industrial University leaded in the numbers of competitors.

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CHEERLEADING TEAM BUILDING AND PROGRESS FACILITATION BY ELEMENTARY SKILLS TEST MODEL

UDC 796.413.418

PhD, Associate Professor **O.V. Timofeeva**[1]
PhD **A.D. Dugbley**[1]
Associate Professor **A.D. Malchenko**[1]
A.A. Soparev[1]
[1]Peoples' Friendship University of Russia, Moscow

Corresponding author:
olgtimofeeva@mail.ru

Annotation

Objective of the study was to form a cheerleading picked team in the performance discipline based on control over the basic elements.
Methods and structure of the study. Sampled for the study were the first-year female students of Peoples' Friendship University of Russia (all faculties). The study objective was to form a cheerleading picked team in the discipline based on control over the basic elements, for which purpose a questionnaire survey was conducted among the female students who had entered the first year of study. Those girls, who had indicated that they were professionally engaged in either gymnastics or dancing, were invited to practicals. Further on, based on the analysis of scientific and methodological literature and evaluation of the basic elements used in the competitive performance discipline compositions, we singled out seven control tests, which execution was assessed on a 5-point scale.
Results of the study. The control tests made it possible to form the picked team and proved that the female students qualified for the picked team had different levels of technical fitness due to various sports and dance activities they had been engaged in before entering the university.
Conclusion. The use of control tests in the training process enabled to plan and control individual and team technical fitness, which resulted in the statistically significant changes in all the test rates.

Keywords: *cheerleading, team building, basic skills test, basic cheerleading element, technical fitness, theoretical and practical trainings.*

Background. Cheerleading is the actively progressing motor–coordination–intensive sport discipline that combines a variety of dancing styles and gymnastics elements on a choreographic basis. It has been increasingly popular for the last decades as verified by the inflow of enthusiasts and growing university team numbers and competitions with the great progresses and accomplishments [3]. The competitive routines include the sets of obligatory basic elements that must be executed perfectly and synchronously in pacing, timing and amplitudes by every team member – that means that the teammates must be equally skillful in at least every basic cheerleading element execution technique [1,2,4]. This is the reason why the prospects for the picked teams are selected with a special attention to their basic cheerleading element execution skills otherwise they may imbalance the team performance standards. Thus the basic cheerleading element test systems are always of special interest for the sport community.

Objective of the study was to compose a cheerleading team for performance discipline and facilitate its progress using on a new elementary skills test model.

Methods and structure of the study. The study was run in 2017–19 at the Peoples' Friendship University's Physical Education and Sports Department. First, the beginner female students were surveyed by a questionnaire survey form to select the prospects having the prior dancing or gymnastics sporting experiences. Then we made an analyses of the relevant theoretical and practical study reports to analyze and classify the competitive performance cheerleading skill sets; and offered seven basic skills tests, each of them rating the basic cheerleading element execution on a 5–point scale (see Table 1 hereunder). We rated the excellent, good, satisfactory and low/ poor skills by 5, 4, 3, 2/ 1 points, respectively, in the selections and qualifications for the university cheerleading team. Later on we used the new basic skills tests model in the 2–hour theoretical and practical trainings three times a week for two academic years to further streamline the test procedure and assess it benefits.

Results and discussion. We sampled the 1–year female students (n = 121) to primarily select only 33% (n = 40) prospects with the dancing or gymnastic sporting expe–

Table 1. *Pre- versus post-experimental (1, 2) basic skill test rates of the performance cheerleading team (n=40)*

Tests	Test stage	Points					$\overline{X} \pm m$ n = 40	p
		1	2	3	4	5		
		tested share (%) of the total						
Splits	1	–	5	35	25	35	3,9±0,15	<0,05
	2	–	–	15	25	60	4,5±0,11	
Leg swings	1	–	5	20	35	40	4,1±0,14	<0,05
	2	–	–	15	15	70	4,6±0,11	
Basic arm skills	1	10	15	22	28	25	3,4±0,2	<0,05
	2	–	–	10	40	50	4,4±0,10	
Obligatory cheer jumps	1	30	38	10	12	10	2,4±0,2	<0,05
	2	–	2	23	45	30	4,0±0,12	
Obligatory cheer leaps	1	5	25	26	22	20	3,3±0,18	<0,05
	2	–	–	20	42	38	4,2±0,11	
Pirouettes	1	15	20	35	13	17	3,0±0,2	<0,05
	2	–	5	37	25	33	3,9±0,14	
Acrobatic elements	1	18	13	22	22	25	3,3±0,22	<0,05
	2	–	–	32	23	46	4,4±0,14	

riences, conditional on being rated relatively high by the prior basic skills tests. Having surveyed the university team prospects (n = 40), we found only 7% Masters of Sport (MS, n = 3), 10% Candidate Masters of Sports (CMS, n = 4), and only 20% (n = 8) Class I – III or lower qualified former gymnasts. Most of the prospects (53%, n = 21) reported the pre – university high – level dancing experiences, and 10% (n = 4) – high – level ballet experiences. This means that the university cheerleading team was formed mostly of the girls with the prior gymnastics/ ballet/ dancing experi – ences tested with widely varying technical fitness as was found by the basic skills tests procedure: see Table 1.

The prospects had been trained for two academic years, with their basic cheerleading element progress in the the – oretical and practical trainings tested by the basic skills tests procedure, and with the trainings giving a special priority to the individual basic cheerleading element ex – ecution techniques and teamwork perfection aspects in terms of pacing, timing, synch in amplitudes and movement precision as required by the modern cheerleading tradi – tion and standards. As a result the post – training tests found significant progress in every tested element. Thus, the numbers of trainees tested excellent and good in the splits and swings tests were found to grow by 25% and 30%, respectively; in the arm skills, cheer jumps and leap techniques – by 25%, 20% and 18%, respectively; and in the pirouettes and acrobatic elements execution skills by 16% and 21%, respectively.

Conclusion. The new basic skills tests procedure was found beneficial for the prior qualifications for the per – formance cheerleading university team and its technical and teamwork progress facilitation purposes to meet the modern cheerleading standards and traditions. The basic skills tests model made it possible to improve and effi – ciently manage the theoretical and practical trainings and put the individual and team cheerleading basic elements technical growth on a consistent basis, as verified by the significant progress of the sample in every test rate.

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CARDIORESPIRATORY SYSTEM FUNCTIONALITY IN STUDENTS INVOLVED IN THERAPEUTIC SWIMMING

UDC 612.216.2

V.S. Milashechkina[1]
A.V. Rusanov[1]
A.S. Valyugo[1]
[1]Peoples' Friendship University of Russia, Moscow

Corresponding author:
ea.milash@yandex.ru

Annotation

Objective of the study was to assess the state of the functional reserves of the cardiorespiratory system of students involved in therapeutic swimming.
Methods and structure of the study. The study was carried out in vivo at the premises of the Peoples' Friendship University of Russia and public swimming pool "Harmony", SBI "Physical Culture and Sports Center of the South-West Administrative District of Moscow", Moscow Sport Committee. Sampled for the study were the 1st-2nd-year male students without health deviations, who were divided into two groups: 1st — Control Group — representatives of the body conditioning group (n=28); 2nd — Experimental Group — students engaged in competitive therapeutic swimming (n=17). The cardiorespiratory system functionality was assessed based on the following indicators: chest excursion, vital capacity, oxygen concentration in the capillary blood (in %, using a pulse oximeter), heart rate, systolic blood pressure, diastolic blood pressure, pulse pressure.
Results of the study. The pulse oximetry method revealed that at the beginning of the academic year, oxygen concentration in the capillary blood in both groups did not exceed 96-97%. At the end of the academic year, the average oxygen concentration in the Control Group students remained at the level of 96.32±0.61%, while in the Experimental Group students this indicator increased to 98.47±0.52% ($p<0.01$), which testified to the improvement of the peripheral blood circulation in the students engaged in competitive therapeutic swimming.
Conclusion. As seen from the findings of the study, the following external respiration rates increased objectively in the students involved in competitive therapeutic swimming, which indicated an increase in the power reserves of the cardiorespiratory system: vital capacity, systolic blood pressure, and pulse pressure, as well as oxygen concentration in the capillary blood.

Keywords: *competitive therapeutic swimming, students, health, cardiorespiratory system, functional reserves, physical education.*

Background. Students' physical activity is an integral part of the educational process at the modern university. However, not every university provides an opportunity for students to choose the type of physical activity they would like to do during the physical education classes. At the Peoples' Friendship University of Russia, students are encouraged to choose a sports specialization. Of course, it is impossible to comply with the wishes of all students, but the majority of sports preferences can be realized. Among the most popular types of physical activity is competitive therapeutic swimming. Students with different levels of physical and technical fitness can start swimming. Swimming solves several tasks at once — not to mention it is a necessary applied skill [1] and a means for the comprehensive development of the basic physical qualities and expansion of the functional reserves of the body [3, 4, 6]. According to the literature data, more than 50% of university students are in failing health [5]. One of the reasons of health deterioration among young people studying at universities is decreased motor activity and physical load relief, which means that young people need that kind of motor activity, in which, over a relatively short period, they will get an adequate training load not only on the skeletal muscles but also on the leading adaptation systems of the body that increase its functional reserves [2]. The cardiorespiratory system in one of them.

Objective of the study was to assess the state of the functional reserves of the cardiorespiratory system of students involved in therapeutic swimming.

Methods and structure of the study. The study was carried out in vivo at the premises of Peoples' Friendship University of Russia and public swimming pool "Harmony", SBI "Physical Culture and Sports Center of the South-West Administrative District of Moscow", Moscow Sport Committee. Sampled for the study were the 1st-2nd-year male students without health deviations, who were divided into two groups: 1st — Control Group — representatives of the body conditioning group (n=28); 2nd

Table 1. *Students' cardiorespiratory system performance rates at the end of the academic year*

Indicators	CG	EG	p
Chest excursion, cm	7.41±0.13	9.74±0.42	>0.05
Vital capacity, l	3.82±0.08	5.20±0.15	<0.001
Heart rate, bpm	85.68±3.12	81.74±2.45	>0.05
Systolic blood pressure, mmHg	123.18±3.57	116.24±3.14	>0.05
Diastolic blood pressure, mmHg	89.25±2.50	76.12±1.90	<0.01
Pulse pressure, mmHg	33.82±1.05	40.75±1.06	<0.01

Note. p – significance of differences in the mean group values between EG and CG.

— Experimental Group — students engaged in competitive therapeutic swimming (n=17). The cardiorespiratory system functionality was assessed based on the following indicators: chest excursion, vital capacity, oxygen concentration in the capillary blood (in %, using a pulse oximeter), heart rate, systolic blood pressure, diastolic blood pressure, pulse pressure.

Results and conclusions. At the beginning of the academic year, the subjects' cardiorespiratory system performance rates were measured based on the declared indicators. There were no statistically significant differences between the mean cardiorespiratory rates (p>0.05). At the end of the academic year, the chest excursion rate remained unchanged in the Control Group students and amounted to 7.34±0.67 cm, while in the Experimental Group ones it slightly improved (p>0.05). Such objective indicator of the external respiration as vital capacity increased in the students of both groups; yet, in the Experimental Group, this indicator differed significantly from that in the Control Group – increasing tendency (see Table 1). heart rate and systolic blood pressure did not differ significantly between the Experimental and Control Group at the end of the academic year either. However, diastolic blood pressure and pulse pressure in the students involved in competitive therapeutic swimming differed statistically significantly (p<0.01), which indicated an increase in the power reserves of the cardiac activity.

The pulse oximetry method revealed that at the beginning of the academic year, oxygen concentration in the capillary blood in both groups did not exceed 96–97%. At the end of the academic year, the average oxygen concentration in the Control Group students remained at the level of 96.32±0.61%, while in the Experimental Group students this indicator increased to 98.47±0.52% (p<0.01), which testified to the improvement of the peripheral blood circulation in the students engaged in competitive therapeutic swimming.

Conclusion. As seen from the findings of the study, the following external respiration rates increased objectively in the students involved in competitive therapeutic swimming, which indicated an increase in the power reserves of the cardiorespiratory system: vital capacity, systolic blood pressure, and pulse pressure, as well as oxygen concentration in the capillary blood.

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CONCEPTUAL PSYCHOGRAPHIC TEST AND TRAINING MODEL FOR PROGRESS IN ADAPTIVE CHESS SPORT

UDC 796.077056.266

PhD, Associate Professor **I.V. Mikhailova**[1]
Dr. Hab., Associate Professor **S.N. Fomina**[1]
[1]Russian State Social University, Moscow

Corresponding author:
chessy07@mail.ru

Annotation

Objective of the study was to develop and experimentally substantiate a conceptual model of psychic profiling for chess players with health deviations, which implied the implementation of integrated pedagogical control in mass sports and elite sports.
Methods and structure of the study. The study was carried out from 2005 through 2015 on the basis of the Internet portal "Chess Planet"; Moscow state budgetary institutions; territorial centers of social services "Alekseevsky" and "Yuzhnoportovy"; Chess House of RSSU. The sample was made of 1257 chess players with health deviations.
Results of the study. The findings had made it possible:
- to determine the component composition and highlight the most professionally significant qualities of chess players with health deviations in the training and competitive process based on the psychic profiling method;
- to set up a base of criteria for diagnostics of professionally significant intellectual and mnemonic functions of chess players;
- to build an individualized psychodiagnostic model of integrated control of mental abilities and conditions of chess players with health deviations;
- to outline the prospects of adaptive chess sport as a mechanism of socialization and social integration of the target contingent.
Conclusion. The experiment had made it possible to transform individual's intellectual potential into a sports result, namely: 72 chess players had the titles by the Unified Sports Classification System of Russia, 39 athletes achieved an international chess rating.

Keywords: *adaptive chess sport, mental performance profile, players with health limitations, operational memory, thinking capacity, valuation function, psychographic test*

Backgroundю. Presently the sport research community gives a high priority to the motor skills training methods and tools viewed as the key for progress in adaptive sports disciplines [5]. However, as has been proved by the national and international practical experiences (particularly in the modern adaptive chess sport), progress in the intellectual (as provided by IOC) adaptive sports disciplines may be facilitated by the mental skills developing trainings with the relevant abstract logical skills training exercises geared to mobilize the individual intellectual resource and employ it on the most efficient basis. Modern chess sport is ranked high among the intellectual adaptive sports disciplines intended to meet the social demand for accessible habitual adaptive sport services, and this is one the reasons why the adaptive chess discipline was listed with the 'Childhood Decade' Sports Project [2]. It should be mentioned, however, that the systemic social and training benefits and immense resource of the modern adaptive chess sport are still underestimated by the theoretical and practical research communities and, hence, the adaptive chess sport is sill underemployed as an efficient human resource developing and competitive progress facilitation tool. We would emphasize that the individual mental performance is critical for competitive accomplishments in the modern chess sport.

Objective of the study was to develop and test benefits of a new conceptual mental performance profiling (psychographic) and training model for adaptive chess sport players.

Methods and structure of the study. We made, for the purposes of the study, a content analysis of the relevant study reports with concern to the adaptive–sports–specific mental (psychographic) performance profiling methods [1,3,4,7,9] and complemented their findings by our own practical training and coaching experiences accumulated at the Russian State Social University's Chess House [6]. We also applied the intellectual functionality and conceptions formation theory (by P.Y. Galperin and N.F. Talyzina, 1968), programmed training concept (by B. Skinner), psychographics concept (by V. Stern) and the digital tech-

nological transformations concept (by A.L. Kudrin) to lay a theoretical and practical basis for this study.

Based on the above customizable psychographics methods and concepts, we designed our conceptual mental performance profiling model for application in the adaptive chess sport, to facilitate progress of the players with health limitations [8]. The psychographs of the model give a range of key progress indicators to profile progresses on the relevant sport-specific qualities test scales and effectively customize/ individualize the adaptive chess sport training systems so as to fully mobilize the individual intellectual resource for success.

We run a Research Project "Action plan to facilitate integrated Chess Problems sport-specific trainings in the general and supplementary educational systems" (registration number NIOKRT AAAA-A17-117071220087-2 dated 12.07.2017) to come up with a set of practical recommendations on how the intellectual resource of the handicapped chess players should be mobilized on a diagnose-specific basis in every training and competitive progress stage.

Results and discussion. Let us consider the new frame mental performance profiling (psychographic) model for adaptive chess sports in detail. The model testing experiment was run in the period of 2005-2015 on the Chess Planet website, at the "Alekseevsky" and "Yuzhnoportovy" District Social Service Centers in Moscow, and at the Russian State Social University's Chess House. Sampled for the study were the 10-72 year old adaptive chess players (n=1257) diagnosed with different musculoskeletal system disorders, hearing/ visual impairments and associating health issues. We used a longitudinal psychographic test system to profile the key mental performance/ progress trends, produce the individual psychographs for specific time periods and highlight the stable and random progress trends [8].

The adaptive chess sport psychographs covered the following three adaptive chess sport players' progress stages. The first stage was designed to set goals and functions classified into the interim and final ones. The second stage was intended to integrate the problems-specific skills and help the players develop the solution/ execution algorithms customized to the individual psychophysical progress stage. And the third stage was to specify the sport progress facilitating intellectual and psychological progress criteria for every individual player to guide the training process in a most efficient manner.

We should emphasize that 'sports-specific qualities' herein mean the combination of the mental and physical individual qualities critical for success in the sport via the intellectual resource mobilizing and transformation activity for the competitive progress. Striving to improve the integrated adaptive chess sport training system, we identified the key sport progress specific qualities that need to be given a special priority in the training and competitive process. We used a commonly recognized set of the mental qualities rating tests to profile the mental and physical health and progress of the sample in the model testing experiment.

The new mental performance profiling (psychographic) adaptive chess sport training model proiritizes the following sport-specific qualities: mnemonic and intellectual functions including operational memory, thinking capacity and valuation function. This basic pool is supplemented by the adaptive chess sport player's psychological and mental/ emotional qualities test rates. We used the following tests for the study purposes: WAM (well-being, activity and mood) test; D. Russell and M. Ferguson Subjective Feel of Loneliness Test; and Spielberger Situational and Personality Anxiety Test; plus the Health Status Survey SF-36 (Short Form-36) toolkit.

In the model testing experiment, we obtained a pool of longitudinal age- and training-stage-specific psychographs. Table 1 gives the adaptive chess sport players' progress-specific qualities by diagnoses; and Figure 1 gives a typical Russian State Social University Experimental Group adaptive chess sport player's psychograph for 2014-15 training period - averaging many psychographs we obtained in the tests in the competitive, recreation, beginner training and sports excellence stages.

Having processed the progress test data by the standard mathematical statistics toolkit using the values averaging method and factor analysis, we found progresses of the sampled adaptive chess sport players on an age- and diagnose-unspecific basis on the psychological/ physical progress, personality and situational anxiety, subjective feel of loneliness etc. rating scales. It should be emphasized that the adaptive chess sport players' progresses in the intellectual functions (operational memory, thinking capacity and valuation function) were associated with progresses in mood and activity.

We also found progresses in the socialization/ social integration of the adaptive chess sport players as presented in Table 2; albeit our interpretation may be subjective enough. Note that the regresses in the D. Russell and M. Ferguson feel of loneliness test rates and the C. Spielberger personality and situational anxiety test rates may be interpreted as indicative of improvements in the psycho-emotional statuses of the Russian State Social University adaptive chess sport sample.

The mental performance profiling (psychographic) and training model for adaptive chess sport players was found beneficial as verified by progresses of 72 adaptive chess players in the Unified Russian Sports Qualification System records, and 39 players who made progress on the international chess rating lists.

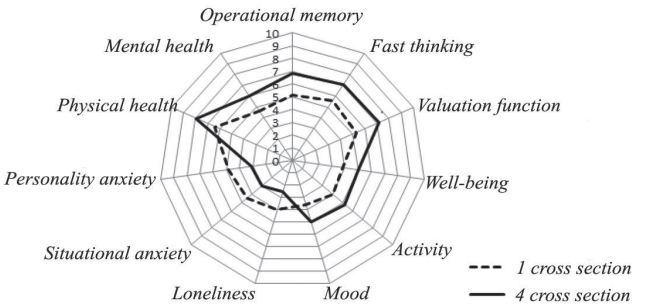

Figure 1. *Typical Russian State Social University's Experimental Group adaptive chess sport player's psychograph for 2014-15*

Table 1. *An adaptive chess sport player's psychograph*

Sport-specific qualities	Test rates
Mnemonic and intellectual functions	Operational memory
	Thinking capacity
	Valuation function
Psychophysical personality qualities	Personality anxiety
	Physical health component (SF – 36)
	Mental health component (SF – 36)
Mental/ emotional individual status	Well – being
	Activity
	Mood
	Loneliness
	Situational anxiety

Table 2. *Russian State Social University's Experimental Group adaptive chess sport players' progress rates for 2014-15*

Intellectual and psychophysical qualities tests		Progress, %
Intellectual qualities and functions tests		+32
WAM test		+34
Subjective feel of loneliness test		– 36
Spielberger personality and situational anxiety test		–33
SF – 36 test	Physical health test rate	+23
	Mental health test rate	+30

Conclusion. Modern adaptive chess is ranked high on the list of the adaptive chess sport disciplines the sport facilitates an individual progress on an inclusive basis and provides effective socialization/ social integration mechanisms for the adaptive chess players with special benefits from the modern digital technologies increasingly accessible via the open chess training courses/ platforms or cloud/ streaming platforms. When a chess training systems prudently combines the digital training platforms with virtual chess education systems, they have every opportunity to mobilize and employ the individual intellectual resource of an adaptive chess player for competitive progress. The modern progress test systems synergized with the new mental performance profiling (psychographic) and training model may effectively contribute to the evolution of the adaptive – chess – sport – related knowledgebase and put it on a systemic basis. The modern chess sport on the whole and the adaptive chess sport in particular shall be given a special priority by the social policies driven by the consolidating national ideas, since this sport discipline offers excellent self – realization, socialization, intellectual resource mobilizing and life quality improvement benefits. It should be noted, however, that the efforts to effectively socialize the adaptive chess sport players may be challenging enough and need to be supported by the special communal resource consolidation and channeling initiatives.

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SPECIAL PHYSICAL FITNESS TEST MODEL FOR JUNIOR QAZAQ KURESI WRESTLERS

UDC 796.012

Dr. Hab., Professor **F.I. Sobyanin**[1]
Postgraduate student **A.S. Rakhmetzhanov**[1]
Postgraduate student **S.A. Makashev**[1]
Associate Professor **K.I. Ismagulov**[2]
[1]Belgorod State National Research University, Belgorod
[2]West Kazakhstan Innovative Technologies University, Uralsk
[3]Makhambet Utemisov West Kazakhstan State University, Uralsk

Corresponding author:
nikulin_i@bsu.edu.ru

Annotation

The article is devoted to the special physical fitness rating method in application to athletes involved in the Kazakh national wrestling sport - Qazaq Kuresi. We assessed a set of technical and tactical actions used in Qazaq Kuresi that are the most effective during competitive performance.
The analysis of special literature and pedagogical observation data revealed a high frequency of application of the selected complex of Qazaq Kuresi techniques. The following technical and tactical actions were considered when assessing special physical fitness of the young wrestlers: flying roll, hip roll, reap, leg sweep (front and back), floating drop, trip throw.
The data obtained can be used in pedagogical control over young Qazaq Kuresi wrestlers' physical fitness rates.
The sequence of mastering and improving the combat maneuvers was built in such a way as to first master more technically simple maneuvers, and only then - more technically complex ones (in accordance with the basic didactic principles). At the same time, during trainings, physical activity was focused on the muscle groups involved in the performance of the combat maneuvers. Moreover, sets of exercises were used to develop those skills that are most important in Qazaq Kuresi: dynamic strength, speed, coordination abilities, strength endurance.
Results of the study and conclusions. The study showed that the test rates were significantly higher in the Experimental Group than in the Control one. The following technical and tactical actions were selected from the total number of throws (rolls) to assess special physical fitness of the young wrestlers: flying roll, hip roll, reap, leg sweep (front and back), floating drop, trip throw.

Keywords: *Qazaq Kuresi wrestling sport, Kazakhstan, national wrestling sport, special physical fitness (SPF), progress tests*

Background. For the last few years the national Qazaq Kuresi wrestling sport has been increasingly popular in the Republic of Kazakhstan as demonstrated, among other things, by the major international Qazaq Kuresi competitions including world championships. The national sport community reports a growing interest in the Qazaq Kuresi theory and practice, rules of competitions, their traditions and organization requirements [1–3], although many sport enthusiasts feel a growing need for the special physical fitness training models for junior Qazaq Kuresi groups. This was the reason for us to develop and offer a special physical fitness training model for the 14–16 year-old Qazaq Kuresi wrestlers that may be of theoretical and practical interest for the sport community.

Objective of the study was to analyze benefits of the new special physical fitness training model for the 14–16 year-olds in the national Qazaq Kuresi wrestling sport.

Results and discussion. Our analysis of the relevant study reports showed that the Qazaq Kuresi theory and practice is still in need of the sport-specific special physical fitness training methods and tools, with a few reports on the issue being rather fragmental [1,3,4] despite the fact that the first- to seven-year Qazaq Kuresi training tradition assigns about 20% of the training time to the special physical fitness excellence practices, with the percentage declining by the 7th year in contradiction with the common athletic progress/ technical excellence logics [4].

Practical and theoretical Qazaq Kuresi experience accumulated by the Makhambet Utemisov West Kazakhstan State University's Qazaq Kuresi groups made it possible to develop highly efficient technical and tactical training toolkit as verified by the competitive accomplishments of the MUWKAU's Qazaq Kuresi team. The progress was analyzed by the J.S. Bayshulakov's study report [4]. It was demonstrated that a few key holds trained by the team were applied more often than the others in 5 Qazaq Kuresi wrestling events of the regional and republican level. Later on these technical and tactical developments were used for the special physical fitness progress test sets by the sport groups. Listed in Table 1 hereunder are the Qazaq

Table 1. *Rated technical/ tactical holds of the junior Qazaq Kuresi wrestlers*

	Hold	Test standard	Incidence rate
1	Dummy catch throw	30–second maximum	2
2	Dummy throw over thigh	30–second maximum	5
3	Dummy heel trip	30–second maximum	3
4	Imbalance throw	3 points	1
5	Heel trip and throw	3 points	4
6	Hook throw	3 points	6

Table 2. *Some of the post-experimental test rates of the EG and RG*

	Test hold	RG average, (n=10) M±m	EG average, (n=10) M±m	t emp.	p
1	Dummy catch throw, 30–second maximum	7,31±0,16	7,65±0,16	2,5	<0,05
2	Dummy throw over thigh, 30–second maximum	7,05±0,19	7,43±0,32	2,5	<0,05
3	Dummy heel trip, 30–second maximum	7,00±0,19	7,27±0,23	2,5	<0,05

Kuresi holds classified by the competitive incidence rates, with 3 and 3 holds rated on parametric and nonparametric scales, respectively.

The test standards were designed to fairly and comprehensively rate the technical execution and physical qualities. The core idea of the training model and progress testing experiment was to prioritize the most efficient and successful competitive toolkit in the age–specific Qazaq Kuresi trainings. The holds mastering and excelling process was intended to first master the simplest holds and then more complicated as dictated by the basic training process logics. The trainings were focused on the hold–specific muscle groups, plus the key physical qualities excelling practices for success in the Qazaq Kuresi competitions including dynamic strength, speed, coordination qualities and strength endurance.

The pre–experimental special physical fitness tests found no meaningful differences between Experimental Group (EG, n=10) and Reference Group (RG, n=10). It should be noted that the tests helped detect the execution drawbacks in both groups, particularly in the hooks, catches and heel trips. Then, in the one–year experimental training cycle, the EG was tested once in two months to rate progress in the special physical fitness aspects and make corrections when necessary; and the RG trainings were traditional, with the progress tested prior to, in the middle and after the yearly training cycle.

The pre– versus post–experimental tests found meaningfully higher progress of the EG in every standard test versus the RG: see an excerpt from the final report in Table 2. The EG progress was facilitated by the systemic monthly special physical fitness progress tests, monitoring and corrective practices geared to excel the technical execution and core physical qualities for the technical/ technical growth.

Conclusion. Modern Qazaq Kuresi wrestling sport community gives a special priority to the sport–specific special physical fitness trainings. Like any other wrestling discipline, the Qazaq Kuresi sport develops a set of the most successful competitive techniques and tactics tested in practical competitions. The special physical fitness trainings must be complemented by the special physical fitness progress test systems with ratings of the most successful holds and their executions that require excellent sport–specific physical qualities. The new special physical fitness training model for the 14–16 year–old Qazaq Kuresi wrestlers of our design was tested beneficial as verified by the EG versus RG progress tests. The special physical fitness training and progress test model may be recommended for application as supplementary to the regular overall physical fitness tests run 3 times in an annual training cycle plus at least 3 times in the precompetitive training cycles for the top–ranking events.

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POWER SNATCH AND JERK SEQUENCES IN CLASSICAL WEIGHTLIFTING MOVEMENTS: PHASING AND TIMING TEST METHOD

UDC 796.012

Dr. Hab., Professor **A.A. Shalmanov**[1]
PhD, Associate Professor **E.A. Lukunina**[1]
[1]Russian State University of Physical Education, Sport, Youth and Tourism (SCOLIPE), Moscow

Corresponding author:
shalmanov_bio@bk.ru

Annotation

Objective of the study was to develop a phase structure of weightlifting exercises based on the kinematic characteristics of barbell movement and dynamic characteristics of the athlete's interaction with the support.
Methods and structure of the study. The ways to distinguish periods and phases of classical weightlifting exercises were developed using two video cameras for bilateral video captures that helped profile the weight movement trajectory at the ends of the grip, and a dynamometric platform for recording support reaction force vector and computing pressure center coordinates. In determining the boundary moments of phases of movement, the authors proceeded from the logical and content analysis of the exercise, knowledge of the physical mechanism underlying its performance, and requirements for a rational snatch and clean and jerk technique.
Results of the study. According to the developed phase structure of the snatch exercise, based on registration of the kinematic characteristics of the barbell movement and dynamic characteristics of the athlete's interaction with the support, the authors distinguish: pre-acceleration phase, transition phase, final acceleration phase, unsupported squat phase, supported squat phase.
When jerking the bar, the following phases are distinguished: half-squat, slowdown, pushing out, unsupported squat.
Conclusion. The proposed phase structure of classical weightlifting exercises to a greater extent reflects the essence of the exercises performed, which consists in the implementation of physical mechanisms of lifting the bar and is more unambiguous in determining the boundary moments of the phases.

Keywords: *technical excellence trainings, weightlifting technique biomechanics, jerk, power snatch, physical movement mechanism, joint mass center, bar mass center, pressure center, tracking analysis.*

Background. Modern movement biomechanics research methods applied by the sport science basically analyze the movement sequences with the phasing and timing analyses. This analytical procedure may be described as the first stage of biomechanical analysis [1] with the routine design being substantiated by the movement biomechanics [2, 9] widely used in biomechanical studies. The sport routine categorization into periods and phases may be highly beneficial, particularly for the elementary skill mastering trainings, technical and physical excellence trainings and physical fitness control purposes. Generally a sport routine phasing study will be driven by a movement breakdown logics analysis. Special attention will be given to movement phases in the special preparatory/ conditioning trainings geared to excel specific elements in the competitive routine. Such preparatory trainings will facilitate and perfect the key physical movement mechanisms of the competitive routine.

It is traditional for the modern national weightlifting sport to categorize the classical power snatch and jerk (in the clean-and-jerk) into periods and phases as provided by A.A. Lukashev in 1972 [3], i.e. into three periods and six phases, with the bar positions versus the support and leg joint angles (particularly knee joint ones) used as the key reference points in the movement kinematics analyses. Thus the A.S. Medvedev's study [4] of the classical weightlifting routine biomechanics gives a detailed analysis of every phase in the power snatch and clean-and-jerk sequence and sets the key goals for every phase.

Power jerk, a final element of the classical clean-and-jerk, is generally categorized into three periods including five phases [4]. Despite the fact that the basic semantics of these periods and phases are no more disputed, we believe that the reference/ phase limiting points need to be revised for the purposes of the execution biomechanics tests in the training and competitive processes. One of the key re-

quirements to such tests is that they should not interfere into the training process with their sensors (like goniometers attached to the knee joints) and other tools of distracting/ hampering effect on the execution. Video captures (particularly the frontal ones) are non-acceptable for the reason that they largely fail to accurately profile the leg joint angle variations in the movement sequence – particularly when the disks block visibility of the knee and hip joints in some moments and the reference points and the movement sequence may not be accurately tracked on the video captures. These limitations urge the research community to look for other ways to precisely phase the routine, fix the reference points and analyze benefits of the new routine breakdown/ phasing models. It is rather important for these reference/ phase delimitating points to be easily detectable to help fairly profile the movement sequence regardless of the individual anthropometric characteristics.

Objective of the study was to categorize the classical weightlifting techniques into phases based on the bar movement kinematics and the athlete's ground contacting dynamics.

Methods and structure of the study. Our extensive studies [5, 7, 8] of the power snatch and clean-and-jerk weightlifting techniques using the special movement biomechanics tests (including the competitive performance biomechanics tests) showed the need for a new weightlifting routine phasing scheme with the revised periods and phases. For the scheme design purposes, we used two video cams for bilateral tracking of the bar end movement and a dynamometric platform to record the force vector components (i.e. the support response profile) and their variations by the pressure center coordinates [3].

The movement phasing (phase delimitation) analysis was driven by the technique structuring logics, knowledge of the physical movement mechanism pattern and the classical power snatch and clean-and-jerk execution standards [7]. Let us remind that a physical movement mechanism is interpreted herein as the movement sequencing by the applied forces, including the muscle forces, in the context of basic laws of mechanics. The core idea is to profile the movement sequence and understand the reasons for every change knowing the acting forces and their key application points.

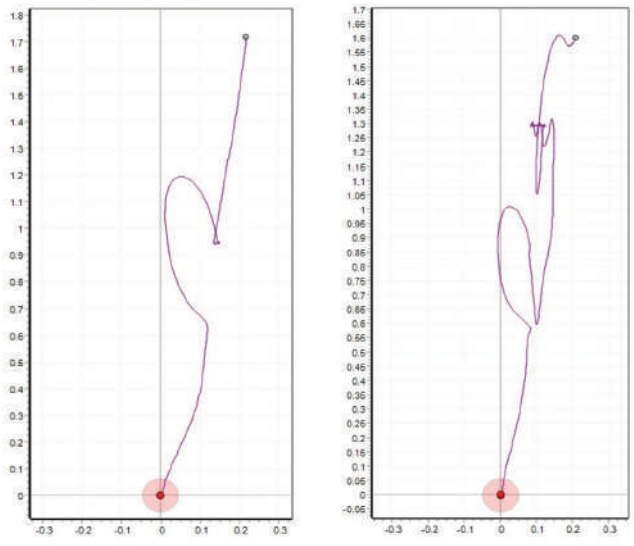

Figure 1. *Bar mass center travel trajectories in the power snatch (A) and clean-and-jerk routines*

For the power snatch or clean-and-jerk movements being successful, the athlete must secure the individual-anthropometrics-specific optimal vertical speed and height of the bar by a facilitating squatting move – with a special attention to the body balancing/ postural and bar controls in the bar movement phases. This goal is achieved by the bar being moved by an S-shaped trajectory (Figure 1) – for the reason that this trajectory, in contrast to the rectilinear one, secures the vertical speed in the final acceleration phase being contributed by the horizontal force element of the curvilinear bar move – with the centripetal force generated by a power backward thrust of the body in the final phase [7]. This power backward thrust is typical for every elite athlete.

Results and discussion. Our power snatch phasing scheme is basically different from the A.A. Lukashev's for we prioritize the bar movement kinematics and the athlete's ground contacting dynamics to fix the reference/ phase delimitation points for every phase (see Figure 2) as follows.

Pre-acceleration phase starts from the moment when the vertical vector of the support response force crosses with the athlete-and-weight joint mass center and ends up when the pressure center moves to the extreme point towards the heels. The bar moves in this phase towards and along the athlete's body by the legs being extended and pressure center shifted towards the heels. Note that the body move is mainly translational with a slight rotation counterclockwise (Figure 2, snapshots 1 and 2). The bar move towards the body is required to facilitate the horizontal acceleration vector and enter the transitional phase.

Transitional phase follows the above phase and ends up at the moment when the bar mass center starts speeding up horizontally from the body (Figure 2, snapshots 2 and 3). The athlete in this phase will as soon as possible take due posture for the final acceleration so as to prevent the vertical bar move being slowed down and maintain the optimal horizontal speed. The pressure center in this phase moves forward from the heels to the toes. It should be mentioned that some beginner athletes use to sub-squat under the bar at this point, but this error results in the vertical speed of the pressure center movement being slowed down.

Final acceleration phase follows the above phase and ends up at the moment when the vertical vector of the bar mass center is maximal (Figure 2, snapshots 3 and 4). Note that the phase starts from a sort of a forward-up push to force the bar speed up horizontally off the body [12]. Then the athlete reverses the bar movement down-upward along a curved line as dictated by the centripetal force with the arms being straight.

Aerial squat phase follows the prior phase and ends up when the ground contact is restored (Figure 2, snapshots 4 and 5). At the beginning of this phase, the athlete moves to the aerial position with the bar still controlled by the centripetal force. Many skillful athletes make a small jump

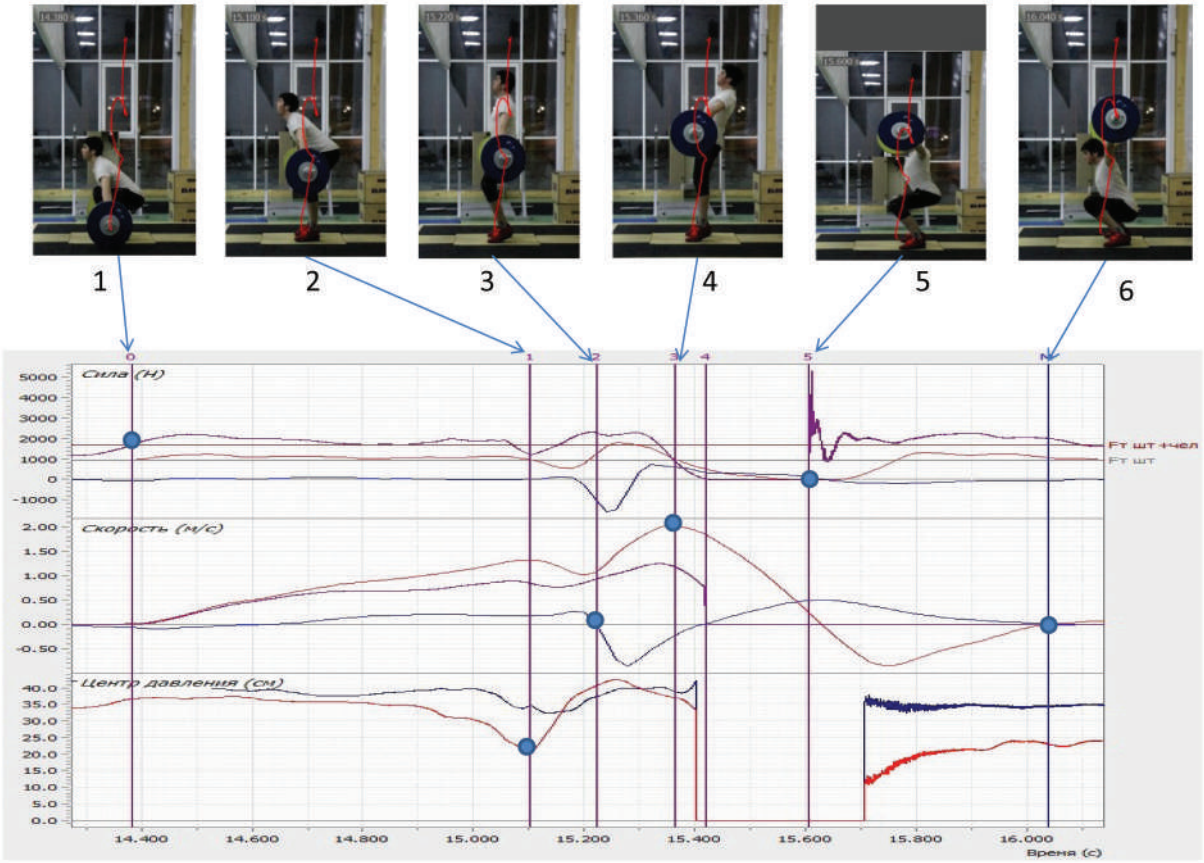

Figure 2. *Power snatch phases. Note that the body positions, numbers and points on the chart refer to the limiting points of the phases*

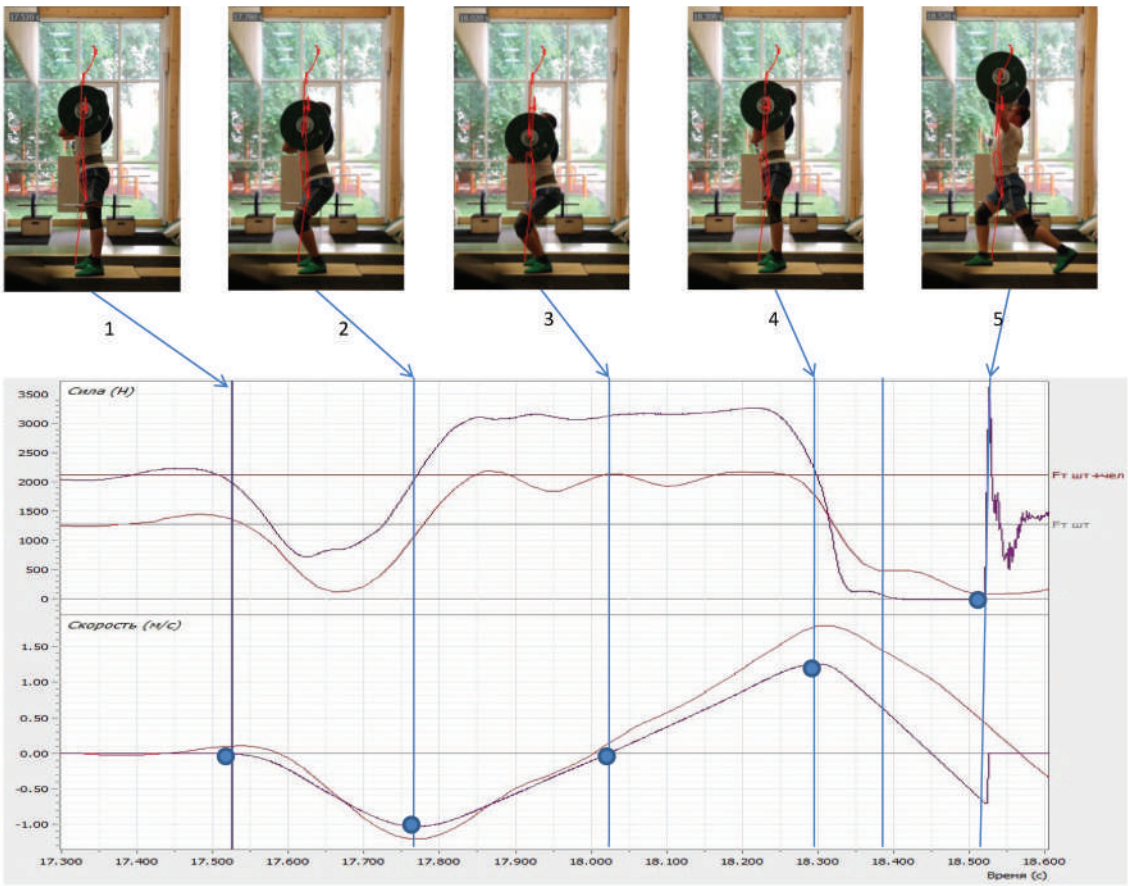

Figure 3. *Jerk sequence phases. Note that the body positions, numbers and points on the chart refer to the limiting points of the phases*

back in this phase to speed up the bar in the back – up – ward direction [7].

And the *supported semi-squat phase* follows the prior phase and ends up when the bar is fixed in the full squat position (Figure 2, snapshots 5 and 6).

Jerk movement sequence in the classical clean – and – jerk technique shall secure the optimal lift speed and top point of the weigh. The physical movement mechanism of this element is geared to create an optimal vertical force impulse and facilitate the movement by the bar elasticity being controlled in the movementinhibition and accelera – tion phases. We phased the jerk movement sequence as follows (Figure 3).

Semi-squat phase starts begins from the athlete – and – weight joint mass center moved downward, and ends up when the joint mass center speed comes to maximum (Figure 3, snapshots 1 and 2).

Inhibition phase follows the prior phase and ends up at the lowest point of the semi – squat when the vertical speed of the mass center falls to zero (Figure 3, snapshots 2 and 3), with a special role played by the bar elasticity and weight control skills of the athlete.

Push-up phase follows the prior phase and ends up when the joint mass center speed is maximal (see Figure 3, snapshots 3 and 4). A special priority in this phase is given to the push – up and backward move with power extension in the knee joints and coming to the toes in the final point of the phase.

Aerial semi-squat phase follows the prior phase and ends up when the ground contact is restored (Figure 3, snapshots 4 and 5). Note that the athlete pushes up the bar to come to the aerial position.

Further phasing of the movement sequence was con – sidered impractical since the dynamometer platform size (90Ч90cm) was too small for accurate rating of the re – sponse force.

Note that Figure 3 gives the jerk phasing pattern based on the athlete – and – weight joint mass center tracking analysis. Similar phasing may be made based on the bar mass center tracking analysis, although the phase limiting points in the both cases are mostly different in timing. It can be assumed that the closer are the limiting points in the both analyses, the "tougher" is the athlete's control of the weight in the semi – squat and push – up phases.

Conclusion. We believe that the classical weightlift – ing moves phasing scheme outlined herein gives a closer approximation to the essence of the standard weightlifting motor skills, more accurate in delimitation of the move – ment phases and, therefore, may be efficient for the execu – tion biomechanics and physical fitness tests and analyses in trainings and competitions – with application of the bilateral video captures and a dynamometric platform.

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HEALTH RISKS OF FAKE FOODS AND BENEFITS OF MODERN ERGOGENIC DIETARY SUPPLEMENTS FOR SPORTS

UDC 796.015

Dr. Biol., Professor **A.V. Lysenko**[1]
PhD, Associate Professor **T.A. Stepanova**[1]
PhD, Associate Professor **S.S. Vassel**[1]
D.S. Lysenko[1]
[1]South Federal University, Rostov-on-Don

Corresponding author:
alysenko@sfedu.ru

Annotation

Objective of the study was to summarize the many years' experience in the in-house studies on the development of optimal algorithms for using modern ergogenic aids to improve the results in elite sports, as well as enhance the healthcare effect of trainings in amateur sports (based on the nutrients approved by WADA).
Methods and structure of the study. During the experiment, we analyzed the effects of more than 20 biologically active peptides on the body of athletes and representatives of population groups, the vital activity of which is associated with the influence of various adverse environmental and professional factors. We described the authors' express test developed on the basis of a refractometric analysis and designed to detect food adulteration, and proved its higher efficiency in comparison with the organoleptic method.
Results of the study. The perspectives of using peptide-based biologically active food additives is confirmed by a major impact of in-house experimental studies and literature data indicating the ability of short peptides (mainly consisting of 3-4 amino acids) to interact with DNA, thus regulating gene expression, which results in a large number of positive effects on the human body. An important aspect of the mechanism of action of short peptides is their effect on the intensity of lipid peroxidation.
Conclusion. The analysis of the experimental data on the mechanisms of action and effects of the studied peptides and their complexes (such as pinealon, cortexin, noopept, and many others) suggests the possibility of using biologically active food additives based on short peptides as a safe alternative to pharmacological drugs in order to increase physical working capacity and mental performance, stress tolerance, learning ability, sports records while maintaining health and achieving active longevity.

Keywords: *ergogenic aids, food adulteration, fake foods, active longevity, biologically active additives, dietary supplements.*

Background. Modern research communities worldwide give a special priority to the adaptability building methods and models to improve the individual tolerance to physical, psycho–emotional, environmental, job–specific and in–formational stressors, protect health and secure an active longevity [1–4, 6, 9, 11, 12]. Many leading experts believe thatrational nutrition and food safety make a special con–tribution to the premature aging and disease prevention efforts in the epoch of global physical inactivity and in–formational pressures [4,8]. Well–designed and managed diets are known to form a basis for competitive progress in professional and amateur sports and in physical thera–peutic systems [8]. Some athletes misuse dietary schemes in the efforts to improve the competitive performance in the tightened doping control situation and these schemes are often very unhealthy as they expose the athletes to the risk of injuries and premature aging rather than increase and restore the adaptability, physicality, plasticity and en–ergy resource [2–4].

For the last two decades, the Physical Education and Sports Academy of Southern Federal University, in coop–eration with the Moscow and St. Petersburg research teams, has run a variety of nutrition research projects to develop, teston a preclinical basis and implementstress–mitigation, ergogenic and geroprotective drugs for sporting/ profes–sional/ age groups [2, 3, 5]. Modern fake foods (i.e. the foodstuffs with the actual compositions and qualities dif–ferent from the formally stated ones), however, may at least nullify the efforts of nutritionists, gerontologists and other health specialists or even be lethal – e.g. in case of ethyl alcohol being accidentally replaced by methanol in alco–holic drinks.

Objective of the study was to systematize our research findings on the short–peptides– and amino–acids–based biologically active additives, their benefits and ad–ministration algorithms, and offer express tests to detect fake foods.

Methods and structure of the study. We tested and analyzed for the purposes of the study effects of more than 20 biologically active peptides on athletes and other groups exposed to differentenvironmental and job–specific health stressors. The express testsystem of our design is based on

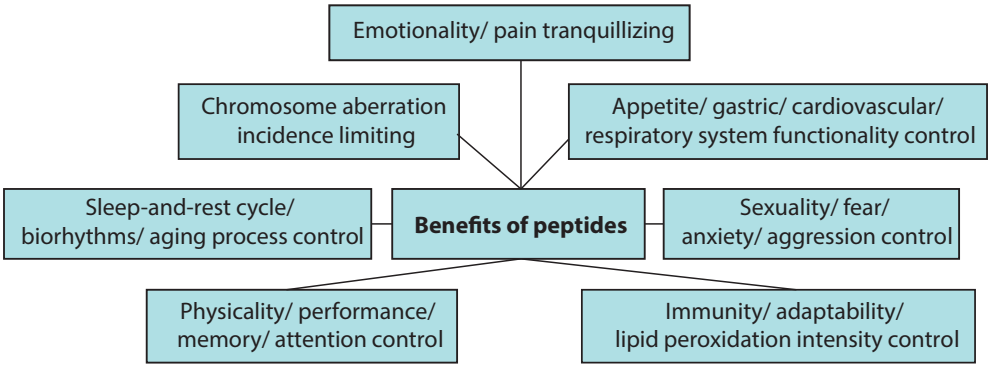

Figure 1. *Functionality control benefits of the biologically active peptides*

refractometric technology that requires neither high-tech equipment nor special reagents, but only a portable and relatively cheap refractometer that may be mastered for a few minutes – to testa wide range of foods. Such refractometers in our tests were operated by the second-year Southern Federal University students (n=5–15) who were not familiar with the basics of refractometric tests prior to the instructions and practical training that took only 10 minutes to master the RZ–116 ATC/ RHB–90 ATC/ RHB 10 ATC and RND–025 ATC models of portable refractometers. Another group of 5–15 students (referred to as the expert group) run organoleptic tests for comparison, with the only exception for the methyl/ ethyl alcohol distinguishing tests, since they are highly unsafe and ineffective in the case. No inter-/ intra-group communication was allowed for the operators during the tests, and no one operator was given an access to the test data obtained by the others. The food samples were tested in identical containers numbered on a random basis a few minutes prior to the tests. The test data processing mathematical statistics tools computed the first-category error rate i.e. the probability of a fake food being tested as natural food; with the differences of the test data arrays rated meaningful by the Student t-test ($p < 0.05$).

Results and discussion. Benefits of the peptides-based dietary supplements have been verified by our own experimental data and other study findings that demonstrated positive effects of short peptides (composed mostly by 3–4 amino acids) on DNA with gene expression control aspects [1–8], as demonstrated by Figure 1 hereunder. We should underline the lipid peroxidation process intensity regulation benefits of the short peptides in this context.

We run the following fake foods detection tests under the study.

Test 1 was designed to detect fake strong alcoholic drinks – i.e. those containing methyl instead of ethyl alcohol. Note that densities of the both agents and their aqueous solutions are virtually the same and, hence, hydrometer tests of their mixtures are ineffective – as well as any organoleptic test method – for the reason that the tastes and smells of both agents are the same. As for the refractive indices of the agents, they are different and may be effectively tested. Thus the refractive indexes of the 40% ethyl alcohol and methanol solutions are 1.355 and 1.3419, respectively (note that refractive index of a 17% ethanol solution in water is the same as the latter). The stronger is the alcohol solution the higher is the difference in the refractive indices. Operators were instructed to make tests of 10 alcohol samples. The refractometric tests proved highly dependable for the lethal alcohol detection purposes as 100% of the admixtures were detected by the tests.

Test 2 was run to detect fake honey in the samples including the water-diluted natural product; sugar-based fake honey; and mixtures of the latter with natural honey.

Test 3 detected counterfeit juices, with the operator required to distinguish natural apple juice from apple nectars and fake juices with sugar, citric acid and dyestuffs ("brown sugar").

Test 4 was used to detect counterfeit edible vegetable oils, with the operator required to distinguish natural linseed oil (refractive index n=1.487) and natural hemp oil (n= 1.478) from counterfeit oil made by dilution of the natural oil with cheaper refined sunflower oil having the refractive index of 1.473.

And **Test 5** was run to detect fake butter which is normally produced using palm oil and/or margarine. Molten milk fat, palm oil and margarine have the refractive indices of 1.4637, 1.4545 and 1.4690, respectively, with the palm oil admixtures tested with the lower indices and margarine admixtures with the higher indices than natural product.

Conclusion. The error rates in refractometric and organoleptic tests are estimated at 0–15% and 25–45%, respectively, with this statistically significant difference giving the grounds to recommend the refractometric method for the food safety and quality assurance programs. Our experimental test data and findings of the relevant study reports showed that the analyzed short peptides and their bioactive compositions (including pinealon, cortexin, noopeptetc.) may be recommended as dietary supplements alternatives to pharmacological drugs for the physical and mental performance, stress tolerance, learning ability, competitive performance and health improvement and active longevity assurance purposes.

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SUBJECTIVITY IN PHYSICAL EDUCATION AS CONDITION FOR PRESERVING HUMAN IDENTITY

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PhD, Associate Professor **L.V. Byankina**[1]
Dr.Sc.Philos., Professor **M.A. Manikovskaya**[2]
[1]Far Eastern State Academy of Physical Culture, Khabarovsk
[2]Pacific State University, Khabarovsk

Corresponding author:
larisa.byankina@gmail.com

Annotation

The cross-idea of this article is to make subjectivity in physical culture theoretically and methodologically legitimate since it is a necessary condition for maintaining personal integrity and identity. Due to its unique ability to harmonize spiritual and physical, physical education is entirely focused on the solution of the problem of formation of social and cultural identity of a person. Paradigmatic searches open the prospect of analytics of physical education as such a way of human life, which is carried out in three interdependent forms: existential, symbolic and institutional. This theoretical and methodological move makes it possible to activate the potential of physical culture, which, as a rule, is meant, but is either on the periphery of researchers' attention or remains beyond the scope of scientific reflection.

The authors note that the indispensable creative potential of physical culture can be fully realized only if there is optimal physical activity, an extensive system of special social institutions. These include not only educational institutions, but also social institutions that perform the functions of management, planning, financing, and information support. The subjectivity of physical education, which is successfully carried out in all its forms, is able to form not only personal identity, but also the nation, as demonstrated by the experience of vivid sporting events.

Keywords: *subjectivity, physical education, existential, symbolic and institutional forms.*

Background. It is known that the ideal of a harmoniously developed personality with a perfect spirit and body was formed in antiquity. Thus, great Socrates, as quoted in Diogenes Laertius, admitted that "there is only one good – knowledge" and asserted the decisive role of the body in its acquisition. "He was engaged in bodily exercises and enjoyed good health..., led such a healthy way of life that when the plague befell Athens, he escaped unharmed" [2, p.110–111]. This impactful ancient Greek mythological subjects, both thought and practice of cultivating a healthy, beautiful body, which gave rise to the Olympic movement, transcending controversies, extremes of absolution in various historical periods first of the spirit, then of the body has now acquired particular acuity and importance.

Objective of the study was to scientifically substantiate the subjectivity in physical education as a condition for preserving human identity from the perspective of philosophy.

Results and discussion. The theoretical and methodological premise of this analytical study is oriented towards a broad ontological perspective, which makes it possible to consistently accumulate the potential of the theory of physical education, psychology, and philosophical anthropology. The guiding goal proves the grounding relation of the personal identity to subjectivity in physical education. Hence, there is a need for a conceptual interpretation of this relation.

We believe it is fundamentally important that the essential components of physical education are singled out to start moving towards the goal. Both at the level of the commonplace sense and sometimes at the level of the specialized knowledge of physical education practitioners, this phenomenon is mainly associated with activities entirely focused on the development and improvement of man's physical qualities and the formation of the bodily culture. But, as noted above, physical education has a unique ability to harmonize spiritual and physical (corporal), thus forming an integral personality. The authoritative physical education specialists [1] analyze it in the context of the epistemological domain of philosophical anthropology, centered on the problem of preserving man's authenticity, integrity and completeness of his personality. The comment of I.M. Bykhovskaya, that "the corporal and spiritual unity ensured by the true physical education and underlying it, testifies to its high potential of formation of an integral personality in real unity of its originally opposing qualities" [1, p.118] seems productive to us as we hold the opinion that physical education, just as culture in general, is a way of our be-

ing, a meaningful form of relationship with the Other [5]. Physical education *shapes* human existence in a particular manner, transforms (gives a well-thought-out image) corporal human nature, bolsters personal aspirations and will to physical improvement through the activities of specially organized social institutions. What is meant here is, of course, the difficulty in defining the term "culture", but it is a special and broad subject and we are addressing it as required by the logic of theoretical discourse: to determine a reflexively formulated position on the original concept.

The ever-increasing variety of interpretations of the term "culture", seeking to "capture its content in the categorical toils", indicates the methodological productivity of the search for a valid paradigm of comprehension and the phenomenon of interest. Paradigmatic searches open the prospect of analytics of physical education as such a way of human life, which is carried out in three interdependent forms: existential, symbolic and institutional.

Explanation of the proposed conceptual approach requires the inclusion of a subject matter related to the understanding of the key notion – *subjectivity*. This is due to the fact that the classical subject is currently undergoing changes caused by the problems of modern epistemology. Despite the fact that in non-classical epistemology the subject-object paradigm that Descartes represented loses its methodological versatility, this does not mean that the theoretical-methodological significance and heuristic potential of subject and subjectivity are leveled out. On the contrary, the reasons, recognizing the need to regain trust in the empirical subject and realize its fruitful interpretative resources, are being strengthened [3]. The concept of "subject", which originated in antiquity, is eventually acquiring other meanings, thus expanding and enriching cultural possibilities. The historical semantics of the subject indicates that its semantic (categorical meaning) content is realized in the ability to actively interact with the world, conceptualize, structure new relations, reflexively shaped authorship, personal position.

A wide range of cultural possibilities, which are being opened before the subject, is realized through physical education. Each of its forms – *existential, symbolic, institutional* – embodies and actualizes different modes or images of subjectivity. Subjectivity does not lose its significance; its meaning is being modified and deepened demonstrating the theoretical, methodological and practical credibility of subjectivity. The sequence of physical education forms does not exclude but rather considers their overlapping in the process of development and improvement of man's corporal and physical existence.

According to the basic proposition of modern philosophical anthropology, man, as an open-minded being, has an infinite variety of life paths ahead for him. And being a conscious being, man chooses his own image and project of being-in-the-world "in the face of other people" (Sartre). It was as early as at the Renaissance that they came to a realization that man chooses his "... place, face, and duty ... of his own free will, in accordance with his decision" [4, p. 249]. And he is the one responsible for his life-purpose choices. Awareness of existential responsibility for physical improvement, existential form is distinguished by freedom, energy with which ideas are generated, reflexive expression of intentions, desires, and at the same time fear of the chosen burden.

Conclusion. Subjectivity in physical education enables to set the tone and shape human reality in terms of its corporal modality in the form of templates: desirable images of corporal characteristics. This process has a symbolic (or strictly cultural) form of the phenomenon under study. The symbolic form aims to develop and create the models of desirable images of physical perfectness, scientifically substantiated programs and methods of their implementation.

The indispensable creative potential of physical culture can be fully realized only if there is optimal physical activity, an extensive system of special social institutions. These include not only educational institutions, but also social institutions that perform the functions of management, planning, financing, and information support. The subjectivity of physical education, which is successfully carried out in all its forms, is able to form not only personal identity, but also the nation, as demonstrated by the experience of vivid sporting events.

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YOUTH PHYSICAL EDUCATION AND SPORTS: VISIONS OF FUTURE, PROBLEMS AND PROSPECTS

UDC 796.011

PhD, Associate Professor **A.N. Yakovlev**[1]
Dr. Hab., Professor **E.P. Vrublevskiy**[2,3]
PhD, Associate Professor **V.I. Stadnik**[1]
A.A. Kravchenin[1]
Master **M.A. Yakovleva**[4]
Master student **N.A. Glushenko**[5]
[1]Polessky State University, Pinsk, Republic of Belarus
[2]Francisk Skorina Gomel State University, Gomel, Republic of Belarus
[3]Zelenogur University, Zelenaya Gora, Poland
[4]Smolensk State University, Smolensk
[5]Far Eastern Federal University, Vladivostok

Corresponding author:
vruevg@yandex.ru

Annotation

Objective of the study was to identify psychological and pedagogical features of perception of the future in adolescents during their physical education and sports activities.
Methods and structure of the study. The study involved the 17-20 year-old full-time students of Smolensk Academy of Professional Education (Regional State Budget Professional Educational Institution SmolAPE), who were engaged in various sports (n=47). Creativity as a personality trait was tested in the 15-16 year-old male (n=18) and female (n=17) schoolchildren (tenth-graders) of Smolensk, who were engaged in team sports.
Results of the study. We determined the overall level of meaning in life, total life satisfaction and irrational attitudes of university students, as well as the correlation between the scales of irrational attitudes and levels of life satisfaction index.
Conclusion. The study showed that in the 10th grade, it was the hyperthymic type of accentuation of personality traits that prevailed in the students (34%). 23% of sporting school graduates belonged to the cyclothymic type of accentuation, and 20% - to the emotive one.

Keywords: *irrational, creativity, physical education and sports, character, youth, life meaning, life satisfaction, irrational mindsets.*

Background. Ontogenetic process is known to have its logics with many of its aspects peaking in the adolescent 15–20 year period when the individual intellectual resource and mental experience is fast accumulated and shaped up within the frame of the inner worldview [9, 13, 14]. The ratios of the age-specific rational and irrational factors have been analyzed by many study reports, although the discussions are still going on due to the contradictions in the relevant fields of knowledge [7,8]. It should be noted that analyses and typologies of the personal responsibility and professional identity [4–6, 8] generally depend on interpretations of "rational" and "irrational".

This age group is highly sensitive to physical education and sports and many external factors of influence that affect the perceived personality value/ status. Many sports help the athlete develop perfect control of own body when mastering the sport-specific motor skills with individual psychological qualities being fully mobilized and progressing for success [11, 12, 10], with the team sports, for instance, with their game positions and highly competitive cyclic and acyclic climates, being particularly facilitative for the personality socializing agenda [1– 3]. Knowing the contradictions and challenges of the modern communities and educational institutions, it may be beneficial to analyze the rational and irrational in the age-specific individual and social domains.

Objective of the study was to analyze the psychological and educational aspects of the vision of future being formed in the junior physical education and sports process.

Methods and structure of the study. We sampled for the study 17–20 years old full-time sporting students (n=47) of Smolensk State University. Subject to the youth creativity survey were young male (n=18) and female (n=17) residents of Smolensk, plus the 15–16 years old school students attending team sports groups.

Results and discussion. The ratios of age-specific rational and irrational factors are still underexplored still the intellectual progresses and mental experiences are rather versatile and governed by the inner worldviews and motor skill sets in the formation process. We run the life-values tests [6] to analyze the life goals, life process and life success apprehensions, Self-locus of control, Life locus

Table 1. *Life meaning rates of the 17–20 year-olds (n=47)*

Low	Moderate	High
28% (n=13)	68% (n=32)	4% (n=2)

Table 2. *Life meaning rates of the 17–20-year-olds (n=47)*

Low	Moderate	High
40% (n=19)	32% (n=15)	28% (n=13)

of control, and the general life meaning rates: see Table 1 hereunder.

As demonstrated by the above, 4%, 68% and 28% of the sample was tested with the high, moderate and low life meaning rates. Given in Table 2 are the general life satisfaction rates indicative of the life interest, determination in pursuing the life goals and the degree of the expectations coming true. We tested the self-evaluations, general moods and life meaning.

As demonstrated by the above, 28%, 32% and 40% of the sample was tested with the high, moderate and low general life satisfaction rates. Furthermore, we used the A. Ellis survey method [10] to rate the irrational mindsets. Thus, 81% of the sample was tested high on the catastrophic irrational mindsets scale; 77% with high self-commitment; and 43% with high others-commitmentattitudes. 43% and 57% of the sample was tested high and moderate on the Self-evaluation and Thinking Rationality scale; and 24% and 75% high and moderate on the Frustration Tolerance scale of irrational mindsets, respectively, with the same proportion found on the others-commitment scale. 23% was tested moderate on the self-commitment irrational mindsets scale; and 19% moderate on the catastrophic irrational mindsets scale; with only 2% of the sample tested low on the Frustration Tolerance scale.

We found a moderate correlation (r= 0.362) between the catastrophic irrational mindsets and moderate life satisfaction rates. Young people tested high on catastrophic irrational mindsets scale tend to perceive every negative event as something terrible and painful – and no wonder that the life satisfaction rates in this group are low too. Of special interest was also the expressed correlation (r = 0.692) between the frustration tolerance and life satisfaction rates, with the Frustration Tolerance rate being indicative of the individual stress tolerance and the ability to cope with frustrating influences. We also found a moderate correlation between the frustration tolerance and life meaning rates (r=0.489); and a high correlation between the self-evaluation and thinking rationality and life satisfaction rates (r=0.746).

The national education community gives a special attention to creativity as one of the key personality qualities [14, 15]. Our study showed that dominating by 10th school grade is a hyperthymic accentuation type (37%); 20% are tested with an emotive type, and 11% with a demonstrative type. Affectively-exalted and cyclothymic personality types were tested in 8% of the sample; inhibited and excitable in 6%, and pedantic type in 4% of the sample. On the whole, 17%, 57% and 26% of the sample were tested high, moderate and low on the creativity scale.

The team-sporting 10-graders were tested with a correlation between the demonstrative accentuation type and thinking fluency (r=0.406), and between the dysthymic accentuation type and thinking fluency (r=0.345). A moderate correlation between the pedantic accentuation type and thinking versatility (r = 0.363) shows that the higher is this accentuation type the higher is the thinking versatility rate. And the more expressed is the cyclothymic accentuation type the higher is the thinking originality and creativity rate (r=0.434).

Conclusion. The substantial range of the youth cultural values was tested dominated by the age-specific priorities and agendas, with 4%, 68% and 28% of the sporting sample tested high, moderate and low on the life meaning scale. At the same time, 28%, 32% and 40% of the sample were tested high, moderate and low on the life satisfaction scale.

The team-sporting 10-graders were mostly tested (34%) with hyperthymic accentuation type, 23% with cyclothymic accentuation type, 20% ranked with the emotional type; 8% with the demonstrative type; 6% with the inhibited and affectively exalted type; and 3% with the excitable type. Furthermore 91% of the team-sporting group was tested with high thinking fluency; 83% with high thinking versatility; and 26% with high thinking originality. The study ranked 6% of the sample high on the thinking rationality scale. Rated moderate on the thinking originality scale was 63% of the sample; 57% was rated moderate on the rational thinking scale; 17% moderate on the thinking flexibility scale, and 9% moderate on the thinking fluency scale. At the same time, 37% was tested low on the thinking rationality scale, and 11% low on the thinking originality scale.

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