

Indicators of physical activity and fitness of male students at Russian universities

Aleksander Yu. Osipov^{1,2,5ABDE}, Vladimir Potop^{3ABDE}, Roman S. Nagovitsyn^{4BCDE}, Elena A. Zemba^{6BCDE}, Aleksander P. Knyazev^{7BCDE}, Irina I. Orlova^{2BDE}, Tatyana I. Ratmanskaya^{1CDE}, Sergii S. Iermakov^{8BCD}

¹Siberian Federal University, Russia

²Krasnoyarsk State Medical University named after professor V.F. Voyno-Yasenetsky, Russia

³Ecological University of Bucharest, Romania

⁴Glazov State Pedagogical Institute named after V.G. Korolenko, Russia

⁵Siberian Law Institute of the Ministry of Internal Affairs of Russia, Russia

⁶Reshetnev Siberian State University of Science and Technology, Russia

⁷Udmurt State University, Russia

⁸Gdansk University of Physical Education and Sport, Gdansk, Poland

Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Abstract

Purpose: A significant volume of data on the level of physical activity and health of male students presents at the literature. Scientists use the International Physical Activity Questionnaire (IPAQ) to collect data. Scientists point to the need to use objective practical tests that complement the IPAQ data. The purpose of the research is to search for objective data on the level of physical activity of undergraduate male students receiving education in Russian Federation.

Material: Participants – male students (n=205, age-19-20 years). The period of research is March-April 2019. Students were divided into groups: G-1 – students (n=127) who did not have proof of their physical activity in sports and fitness, G-2 – students (n=78) who had provided confirmation. The International Physical Activity Questionnaire (IPAQ) in its extended version assessing four domains of activity, which was supplemented with original questions regarding perceived physical fitness (high, moderate, low) and favorite physical activity in sports and fitness was used in research. Students' physical fitness profile testing is performed using Functional fitness assessment tests. The collected data were analysed using SPSS20. Physical fitness test results were compared by using Mann-Whitney U–test.

Results: The IPAQ data indicate a significant (P<0.001) advantage of students (G-2) in total physical activity. Students (G-1) have a significant (P<0.01) advantage in the volume of physical activity at work. The volume of physical activity in sports and fitness is significantly higher (P<0.001) for students (G-2). Functional fitness tests showed a insufficient level of physical fitness of students (G-1 and G-2). The results indicate a significant (P<0.01) advantage of students (G-2) in physical profile.

Conclusions: Russian male students have more total physical activity than male students from African countries, Turkey, Iran, and Ukraine, but have a significantly low total physical activity level than students from some European countries. The total physical activity volume of Russian university male students is slightly less than the recommended by experts (6000 minutes per week or more). The volume of validated physical activity in sports and fitness of Russian students is about 39 minutes per day. The level of physical fitness of Russian male students does not fully comply with the Functional fitness assessment tests targets. A large proportion of sports and fitness physical activity has a significant impact on the results of functional fitness tests. Data on favorite types of physical activity of Russian male students show a preference for young men to physically dominate their peers. Health preservation and health care are not the main aim of students.

Keywords: physical activity, male students, functional fitness tests, self-assessment of physical fitness.

Introduction

Experts in the field of health and medicine pay attention to a significant decrease in the level of daily physical activity (PA) of the population [1]. Scientific data on the assessment of the PA level of students indicate a lack of regular PA of modern young people [2]. The lack of regular PA is the main threat to the development of obesity in modern youth and students [3]. It was found that a significant percentage of university students do not

follow the recommendations for performing a certain volume of PA during the day (60 minutes of moderate PA) [4], and the week (150 minutes of vigorous PA) [5]. It is known that the transition from school to university is accompanied by a decrease in motor activity, an increase in a sedentary lifestyle and the development of the risk of obesity in young people [6]. It was revealed that first-year students experience a sharp decrease in participation in PA, even taking into account mandatory training programs of physical education (PE) [7]. The article presents scientific data on a significant decrease in physical health indicators of students by the end of their studies at universities [8].

© Aleksander Yu. Osipov, Vladimir Potop, Roman S. Nagovitsyn, Elena A. Zemba, Aleksander P. Knyazev, Irina I. Orlova, Tatyana I. Ratmanskaya, Sergii S. Iermakov, 2020
 doi:10.15561/20755279.2020.0105

Senior students have sufficient knowledge of the benefits of regular PA, but the level of their weekly PA remains insufficient [9]. Experts recommend that modern students significantly increase their level of PA and exercise to improve their physical [10] and emotional status [11].

A frequently used tool for collecting data and evaluating the level of PA of various population groups is the International Physical Activity Questionnaire (IPAQ) [12]. Experts note that IPAQ, although it needs some modification to improve the reliability of data evaluation, remains the main tool for collecting information about the level of PA of the evaluated individuals [13].

The IPAQ data from male students in some European countries (Poland, Czech Republic, Hungary, Slovakia) indicate that students on average have a little more than 6,000 minutes of PA per week. In this volume, activity in sports and fitness is about 1,835 minutes per week [14]. Experts consider the volume of PA more than 6000 minutes per week sufficient for young students [15]. The data on the volume of PA of students in Ukraine show that young men have about 4800 minutes of PA per week, of which activity in sports and fitness is about 1665 minutes [16]. Students from Turkey have several more than 3,000 minutes of PA per week [17]. The data from Iranian scientists show that the level of PA in 46% of young men is low (less than 600 minutes per week) [18]. The IPAQ results from students in some African countries indicate a fairly low level of weekly PA among young people. Students from Libya on average have less than 300 minutes of PA per week [19]. Students from Ghana have less than 100 minutes of PA per week [6].

The data from Russian scientists indicate a lack of weekly PA of modern students – less than 3000 minutes of physical activity per week. PA in sports and fitness is only about 700 minutes per week [20]. However, these data characterize the volume of PA not only of students, but also of those who completed their studies at universities. A comparative analysis of IPAQ results of students from Russia (Surgut) and Kazakhstan (Karaganda) indicates a fairly low volume of total PA of Russian students – 1748 minutes per week (the volume of PA in sports and fitness 524 minutes per week). However, these data include IPAQ results for male and female students [21]. There is a lack of objective data on the level of weekly PA of young male students from Russia.

A review of scientific data on the volume of PA of students revealed a lack of objective and accurate data on the weekly rate of PA of student youth [22]. Most studies offer an overview of the subjective data obtained from student questionnaires. Such data cannot be considered objective completely. It is indispensable to continue monitoring the PA of young people using modern research techniques [23]. Scientists point out that there is a need for a qualitative assessment of the subjective data obtained from the interviewed students using various practical tests (objective assessment) [24]. However, experts do not offer uniform, informative and accurate practical tests for the procedure of comparing subjective data of students with objective indicators of PA [25].

The purpose of the research. The search for objective data on the level of weekly PA relative to healthy male students (19-20 years old) from Russian universities. A comparative analysis of the results with the data IPAQ of students from other countries was performed in addition.

Materials and Methods.

Participants

Young (19-20 years) Russian male students (n=205) – students of humanities or technical specialties. All students were relatively healthy at the time of the research. All students gave informed consent to participate in the research and publish the results. All students practiced regularly PE classes at university (180 minutes per week). The students practiced PE classes taking advantage of the choice of their preferred sports activity (sports specialization) or health fitness activity. All procedures of research were approved by the local ethics committee of the Institute of physical culture, sports and tourism (Siberian Federal University).

The research design

The research was conducted in several major universities of the Russian Federation. The research period was about two months (March-April) in 2019. All participants were asked to provide proof of their physical activity in sports and fitness (club cards of fitness centers, documents from sports schools, etc.). Most (n=127) students were unable to provide confirmation. These students formed a group (G-1). Students (n=78) who provided confirmation entered the group (G-2).

The International Physical Activity Questionnaire (IPAQ) in its extended version assessing four domains of activity, which was supplemented with original questions regarding perceived physical fitness (high, moderate, low) and favorite PA in sports and fitness was used in research.

All students were tested the level of physical fitness (Functional fitness assessment tests) [26]. The functional fitness assessment tests MUST be performed consecutively in the following order with the prescribed rest periods between tests. If one or more of the tests cannot be performed (e.g. pushups cannot be performed because of a shoulder injury, etc.) then the score must be entered as ZERO. If the aerobic fitness test is not performed, enter a time of 0 minutes and 0 seconds in one of the options (run, walk, row).

Testing standards: 1. Aerobic Fitness Test (One Mile Run Test); Rest (5 minutes); 2. Upper Body Strength/Endurance (Push-up) Test; Rest (3 minutes); 3. Lower Body Strength/Endurance (Squat) Test; Rest (3 minutes); 4. Core Strength/Endurance (Plank) Test.

Statistical Analysis

The collected data were analysed using SPSS20. Chi-square test was employed to estimate the association between the variables. Physical fitness test results were compared by using Mann-Whitney U-test.

Results

The IPAQ results show a significant ($P<0.001$) advantage of male students (G-2) in total PA (Total PA).

A significant ($P<0.01$) superiority of students (G-1) was found in the volume of PA in the workplace (PA at work). Data on student mobility indicate a significantly ($P<0.01$) higher volume mobility of student (G-2). Data on PA at home did not differ significantly in G-1 and G-2 students. The volume of PA in sports and fitness (Sports and fitness PA) was significantly ($P<0.001$) higher among students (G-2). The overall IPAQ results of the students (G-1 and G-2) are presented in Table 1.

The IPAQ results show that most male students rate their perceived physical fitness is moderate fitness level. The students (G-1) showed 54% of moderate fitness level, students (G-2) – 57%. The overall data regarding self-perceived physical fitness of students are presented in

Fig. 1.

The IPAQ results revealed that the favorite type of PA in sports and fitness for students of both groups is an athletic gym. Then there are sport games (football, basketball, tennis), martial arts, skiing, health walking, swimming. The overall data on the favorite physical activity of students G-1 and G-2 are presented in Fig. 2.

The results of Functional fitness assessment tests showed a low level of physical fitness of students. The students in both groups failed to meet the functional fitness tests targets. A significant ($P<0.01$) advantage in the results of fitness tests (Push-up Test; Squat Test; Plank Test) was revealed for students (G-2) who practice additional sports and fitness classes on a weekly basis. A

Table 1. Differences in domains of PA of male students (G-1 and G-2).

Domain of PA	G-1 (n=127) minutes per week	G-2 (n=78) minutes per week
Total PA	4932.67±146.77	5074.89±163.13*
PA at work	1843.24±39.18**	1818.57±32.26
Mobility	1309.72±52.34	1324.43±64.12*
Household PA	956.34±23.76	961.51±22.49
Sports and fitness PA	823.37±31.49	970.38±44.26*
Validated PA in sports and fitness	180.00±00.00	274.26±58.12

Note (reliability of differences): * – $P<0.001$ – (significance level); ** – $P<0.01$ – (significance level).

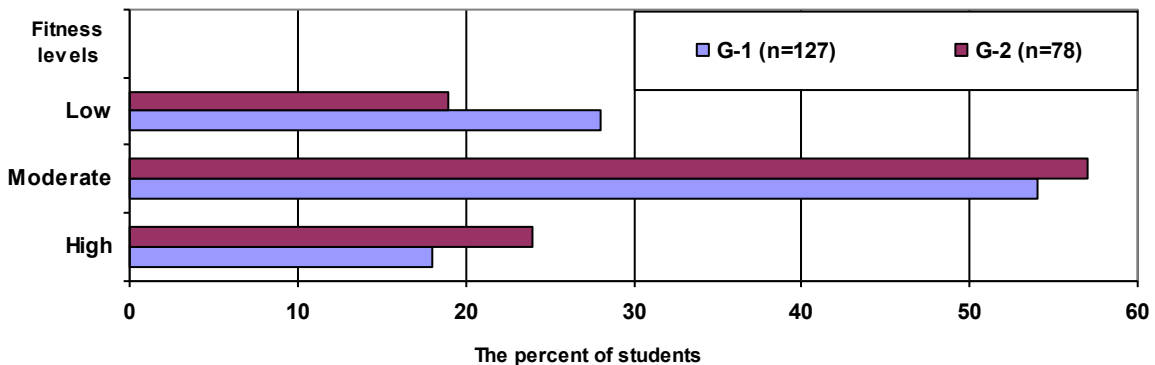


Fig. 1. Self-perceived physical fitness levels of students (G-1 and G-2).

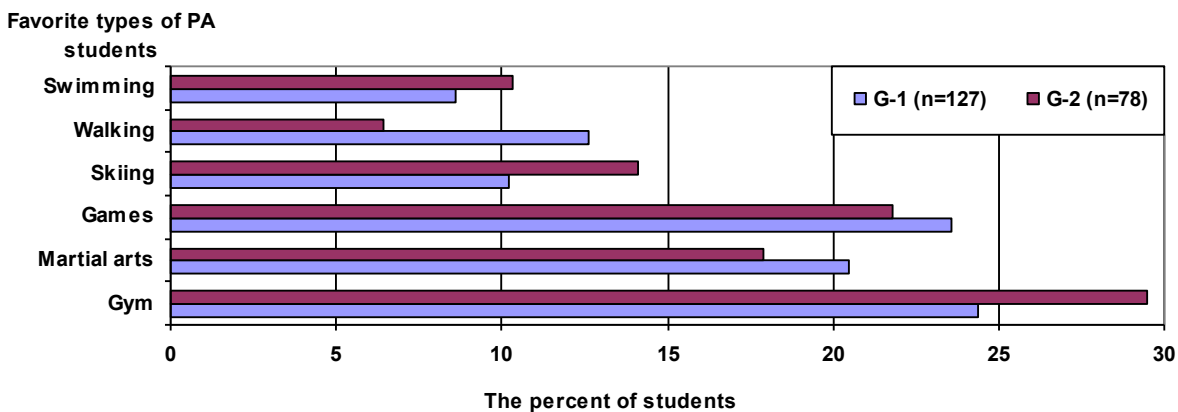


Fig. 2. Favorite types of weekly PA of students (G-1 and G-2).

Table 2. The results of Functional fitness assessment tests of students (G-1 and G-2).

Functional fitness tests	G-1 (n=127)	G-2 (n=78)	Targets
One Mile Run Test	7.22±0.43	7.08±0.47**	6 min.
Push-up Test	24.87±6.22	29.61±6.34*	62
Squat Test	56.33±4.29	62.27±4.16*	100
Plank Test	84.62±6.31	91.53±6.09*	120 sec.

Note (reliability of differences): * – P<0.01 – (significance level); ** – P<0.05 – (significance level).

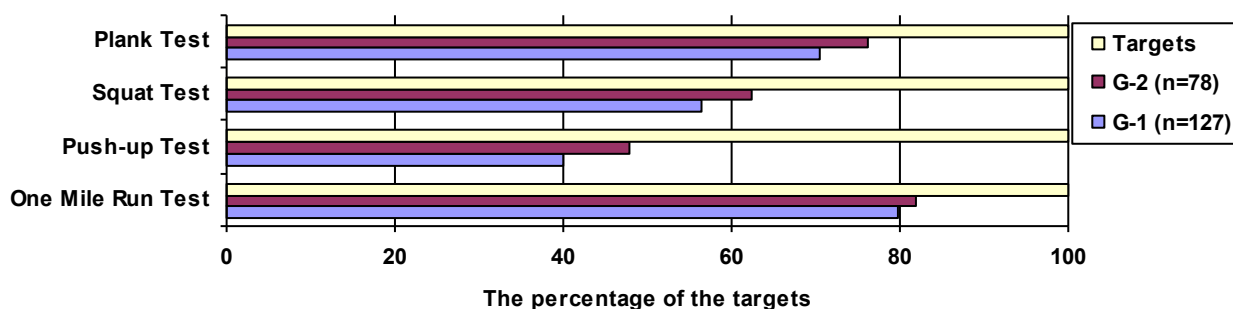


Fig. 3. The data on performance of functional fitness tests.

significant (P<0.05) difference in the results of the One Mile Run Test was found in favor of students (G-2). The results of the tests are presented in Table 2.

The results of Functional fitness assessment tests of students (G-1 and G-2) as a percentage of the targets are presented in Fig. 3.

Discussion

The various data on the sufficient level of weekly PA of students presented in scientific literature. Slovakian students have more than 6000 minutes per week [15]. Polish students have more than 9000 minutes per week [9]. Experts consider both results to be an acceptable level of weekly PA of students. Bosnian experts provided data on the sufficient level of PA of male students to maintain health (6000 minutes per week or more) [15]. Romanian scientists confirm the data presented by Bosnian experts [1, 27]. However, PA assessment studies are often conducted among students of the faculties of physical education and sports and do not affect students of humanities and technical specialties [28]. The students of the faculties of physical education and sports have an additional amount of PA at least 8-10 hours per week [23]. The IPAQ data from Polish students of sports and physical education departments shows 9500 minutes of PA per week [9]. There is a need for more precise determination of the optimal level of weekly PA of students studying in the humanities and technical faculties.

Our research shows the volume of weekly PA of students from 4932 minutes per week (G-1) to 5074 minutes per week (G-2). These results are significantly higher than IPAQ data for students from African countries [6; 19], students from Iran [18], and students from Turkey [17]. The students (G-1 and G-2) outperform in total PA of students from Ukraine [16], but significantly inferior to Ukrainian students in the volume of PA in sports and

fitness. The students are significantly inferior in the total PA to students in some European countries [14, 29]. Comparison of research results with results from other Russian scientists some differences revealed. *Loginov et al.*, indicate a total PA volume of students less than 1800 minutes per week (PA in sports and fitness less than 600 minutes per week) [21]. Our data indicate a total PA volume of more than 4900 minutes per week (PA in sports and fitness more than 800 minutes per week).

Lipošek et al., presented data on the level PA of students at the university of Maribor. The data shows that almost 80% of students do not follow the recommendations of experts on the level of PA per week. Only about 20.5% of students have additional PA in sports clubs (about 150 minutes of moderate PA per week) [2]. Our data indicate that about 40.3% of students have additional PA in the form of regular sports and fitness sessions (at least 150 minutes per week). The average validated PA of students in sports and fitness is 274 minutes per week (about 39 minutes per day). It should be recognized that this data is below the level PA recommended by experts for maintaining physical health (60 minutes per day) [5].

Kokun et al., provided data on Ukraine male students' self-estimation of their health. Most Ukrainian male students rate their PA level and health as good (about 59%) [30]. *Pathare et al.*, reports that 48% of medical students from the United States indicate a high level of physical activity in IPAQ [31]. However experts point to the need for careful assessment of the high level of PA in IPAQ data of students and mandatory comparison of IPAQ data with the results of practical tests of PA [32]. In our data indicate that most male students (more than 50%) rate their PA level with average grades. The results of functional tests indicate a lack of physical fitness of Russian male students.

Essaw et al., presented the results of an assessment

of the level of regular PA in sports and fitness of male students from Ghana. Most students on average spend less than 100 minutes PA per week [6]. The level of weekly PA of students is significantly higher, from 823 minutes (G-1) to 970 minutes (G-2) in our research. Differences in favorite PA of students were revealed. Students from Ghana prefer swimming and running. These types of PA have a wellness orientation and benefit for the physical condition of students youth. Students (G-1 and G-2) prefer athletic gym, sports games and martial arts. These sports and fitness PA have a competitive orientation and contribute to a significant increase in the special physical fitness of students. The choice of favorite types of PA emphasizes the orientation of students (G-1 and G-2) to physical dominance over other people.

Kim & Cardinal, point out that modern students are much better at meeting the need for PA by using a variable choice of different types of PA and sports [7]. All students had regular practice of physical education at the university (at least 3 hours a week) in selected sports and health fitness in our research. However, the level of physical fitness of students does not meet the protocols recommended by experts. Therefore, the availability of variable programs of PA of students is not the main condition for meeting the needs of young males in regular PA and fitness. Search for other significant motivations to increase the weekly PA of modern students it is necessary.

Conclusion

1. It was found that the total PA volume of Russian male students is slightly less than the recommended by

experts (6000 minutes per week or more). Russian male students have more total PA than male students from African countries, Turkey, Iran, and Ukraine. Students in some European countries (Poland, Romania, Slovakia) have significantly more total PA (from 6000 to 9500 minutes per week). The volume of validated PA in sports and fitness of Russian students is about 39 minutes per day. Increase the total PA of Russian male students to the recommended indications by specialists (60 minutes per day or more) it is necessary.

2. It was revealed that the level of physical fitness of Russian male students does not fully comply with the Functional fitness assessment tests targets. The students were able to perform 40% (Push-up Test) to 80% (One Mile Run Test) of the Functional fitness assessment tests targets. A significant advantage of students (G-2) in the results of the Functional fitness assessment tests was found. A large proportion of sports and fitness PA has a significant impact on the results of functional fitness tests.

3. Data on favorite types of PA of Russian male students show a preference for young men to physically dominate their peers. Preservation and health care are not the main aim of students. Insufficient volume of vigorous PA does not allow male students to achieve physical perfection. Comprehensive measures to increase the total level PA and sports and fitness PA of male students from Russian universities are needed.

Conflicts of interest.

The authors of the article declare that there is no conflict of interest.

References

- Fagaras S, Radu L, Vanvu G. The level of physical activity of university students. *Procedia – Social and Behavioral Sciences*, 2015; 197: 1454–1457. <https://doi.org/10.1016/j.sbspro.2015.07.094>
- Lipošek S, Planinšec J, Leskošek B, Pajtler A. Physical activity of university students and its relation to physical fitness and academic success. *Annales Kinesiologiae*, 2019; 9(2): 89–104. <https://doi.org/10.35469/ak.2018.171>
- Gabrys T, Nowak Z, Michalski C, Szmatlan-Gabrys U, Stanula A. Obesity in 18-25-year-olds in relation to their physical activity, and lifestyle. *Physical Activity Review*, 2018; 6: 64–72. <https://doi.org/10.16926/par.2018.06.09>
- Sadeghpour A, Ehsani M, Saffari M, Zamani Alavijeh F. Prioritizing motivational factors related to physical activity of students: Based on the psychological basic needs theory. *International Journal of Applied Exercise Physiology*, 2019; 8(4): 127–132.
- Onetti-Onetti W, Chinchilla-Minguet JL, Martins FML, Castillo-Rodriguez A. Self-Concept and Physical Activity: Differences Between High School and University Students in Spain and Portugal. *Front Psychol*, 2019; 10:1333. <https://doi.org/10.3389/fpsyg.2019.01333>
- Essaw E, Moses M, Afrifa D, Acheampong I, Mensah W, Owusu L. Physical activity patterns and dietary habits of undergraduate students article details. *Journal of Physical Activity and Health*, 2019; 11(1): 115–123. <https://doi.org/10.29359/BJHPA.11.1.12>
- Kim M, Cardinal B. Psychological state and behavioural profiles of freshman enrolled in college and university instructional physical activity programmes under different policy conditions. *Montenegrin Journal of Sports Science and Medicine*, 2019; 8(2): 13–20. <https://doi.org/10.26773/mjssm.190902>
- Nagovitsyn R, Legotkin A, Panachev V, Ponomarev N, Fendel' T, Osipov A. Development of coordination, as one of the key physical professional competencies of graduates of technical specialties. *International Journal of Applied Exercise Physiology*, 2019; 8(3): 145–152.
- Kosiba G, Gacek M, Wojtowicz A, Majer M. Level of knowledge regarding health as well as health education and pro-health behaviours among students of physical education and other teaching specialisations. *Baltic Journal of Health and Physical Activity*, 2019; 11(1): 83–95. <https://doi.org/10.29359/BJHPA.11.1.09>
- Osipov A, Zhavner T, Batunova I, Filonchik O, Starova O, Malakhova A, et al. Physical education and sports achievement ratings as a significant factor to increase the level of physical activity of students and staff in high school. *Journal of Physical Education and Sport*, 2018; 18(2): 592–599. <https://doi.org/10.7752/jpes.2018.02086>
- Olmedilla A, Ortega Toro E, Abenza L. Self-concept, sport, and physical activity practice in university students. *Journal of Human Sport and Exercise*, 2016; 11(4): 415–425. <https://doi.org/10.14198/jhse.2016.114.02>
- Loginov S. Daily physical activity and sedentary (inactive) behaviour of adults from Surgut. *Human. Sport. Medicine*, 2019; 19(4): 70–77.

13. Frehlich L, Friedenreich C, Nettel-Aguirre A, McCormack G. Test-retest reliability of a modified International Physical Activity Questionnaire (IPAQ) to capture neighbourhood physical activity. *Journal of Human Sport and Exercise*, 2018; 13(1): 174–187. <https://doi.org/10.14198/jhse.2018.131.17>
14. Bergier B, Bergier J, Niżnikowska E, Junger J, Salonna F, Acs P, et al. Differences in physical activity and nutrition and silhouette-related behaviours in male and female students in selected European countries. *Annals of Agricultural and Environmental Medicine*, 2018; 25(1): 176–181. <https://doi.org/10.26444/aaem/80988>
15. Mulahasanović I, & Mujanović A, Mujanovic E, Atikovic A, Maglaj E. Level of physical activity of the students at the university of Tuzla according to IPAQ. *Central European Journal of Sport Sciences and Medicine*, 2018; 21(1): 23–30. <https://doi.org/10.18276/cej.2018.1-03>
16. Bergier J, Tsos A, Popovych D, Bergier B, Niżnikowska E, Acs P, et al. Level of and factors determining physical activity in students in Ukraine and the Visegrad countries. *International Journal of Environmental Research and Public Health*, 2018; 15(8): 1738. <https://doi.org/10.3390/ijerph15081738>
17. Bednarek J, Pomykała S, Bigosińska M, Szygula Z. Physical Activity of Polish and Turkish university students as assessed by IPAQ. *Central European Journal of Sport Sciences and Medicine*, 2016; 16(4): 13–22. <https://doi.org/10.18276/cej.2016.4-02>
18. Heravi M, Moeini B, Hazavehei M, Moghimbeigi A, Homayonfar S, Moslem A, et al. Relationship between blood pressure and physical activity in adults 20 to 65 years old. *Amazonia Investiga*, 2019; 7(17): 285–294.
19. Tinazci C, EAlrefai S, Musa O. Patterns of physical activity of Libyan undergraduate students at the university of Tripoli using international physical activity questionnaire (IPAQ). *Sport Mont*, 2019; 17(2): 103–106. <https://doi.org/10.26773/smj.190618>
20. Loginov S, Nikolaev A, Vetoshnikov A, Sagadeeva S. Evaluation of physical activity of Surgut residents according to international questionnaire IPAQ. *Teoriya i Praktika Fizicheskoy Kultury*, 2015; 1: 83–85.
21. Loginov S, Nikolaev A, Smagulov N, Iosev V. Students' physical activity in Surgut and Karaganda: comparative analysis. *Teoriya i Praktika Fizicheskoy Kultury*, 2019; 7: 90–92.
22. Nagovitsyn RS, Tutolmin AV, Maksimov YG, Dimova IA, Karoyan AA, Skryabina DY, et al. Motivation for physical activity of people of different ages. *Gazzetta Medica Italiana - Archivio per le Scienze Mediche*, 2019; 178(10): 799–806. <https://doi.org/10.23736/S0393-3660.18.03965-7>
23. Niżnikowska E, Bergier J, Bergier B, Bergier M, Acs P, Junger J. Study and evaluation of physical activity of youth from the Visegrad countries in relation to the WHO recommendations. *Annals of the National Institute of Hygiene*, 2019; 70(2): 155–160. <https://doi.org/10.32394/rpzh.2019.0065>
24. Leuciuc F. Perception on physical education among students. *Revista Romaneasca pentru Educatie Multidimensionala*, 2018; 10(2): 134–143. <https://doi.org/10.18662/rrem/51>
25. Rodriguez-Muñoz S, Corella C, Abarca-Sos A, Zaragoza J. Validation of three short physical activity questionnaires with accelerometers among university students in Spain. *Journal of Sports Medicine and Physical Fitness*, 2017; 57(12): 1660–1668. <https://doi.org/10.23736/S0022-4707.17.06665-8>
26. *Functional fitness assessment protocol and testing standards*. [updated 2019; cited 2019 Nov 12]. Available from: https://www.wellnessandprevention.com/common/functional_fitness_testing_standards.pdf
27. Sima ED, Potop V. Learning the Swimming Start by Students in Higher Education of other Profiles. *Revista Romaneasca Pentru Educatie Multidimensionala*. 2018;10(1):109–122. <https://doi.org/10.18662/rrem/22>
28. Nagovitsyn RS, Zekrin FH, Fendel' TV, Zubkov DA, Osipov AY. Favourite music as an increasing factor of the result in the control running of athletes. *Journal of Human Sport and Exercise*, 2019; 14(5proc), S1829-S1841. <https://doi.org/10.14198/jhse.2019.14.Proc5.02>
29. Jagiello W. Differentiation of the body composition in taekwondo-ITF competitors of the men's Polish national team and direct based athletes. *Archives of Budo*. 2015;11:329-338.
30. Kokun O, Imas E, Vovkogon A, Potop V, Korobeynikov G, Korobeynikova L, et al. Physical education and sports as a tool for formation of students' psychophysiological readiness to their professional work. *Journal of Physical Education and Sport*, 2018; 18(2): 966–971. <https://doi.org/10.7752/jpes.2018.02143>
31. Pathare N, Conroy J, Gillard A, Hansen M. Physical activity levels, knowledge, and attitudes of physical therapy students in the United States. *Cardiopulmonary Physical Therapy Journal*, 2019; Publish ahead of print. <https://doi.org/10.1097/CPT.000000000000115>
32. Nelson M, Taylor K, Drummer D, Connor K, Vella C. Comparison of self-reported physical activity with objectively measured physical activity in undergraduate students. *International Journal of Exercise Science: Conference Proceedings*, 2017; 8(5): Article 20.

Information about the authors:

Aleksander Yu. Osipov: <http://orcid.org/0000-0002-2277-4467>; ale44132272@yandex.ru; Siberian Federal University, 79 Svobodny pr., Krasnoyarsk, 660041, Russia; Krasnoyarsk State Medical University named after professor V.F. Voyno-Yasenetsky, P. Zeleznyak, 1, Krasnoyarsk, 660022, Russia; Siberian Law Institute of the Ministry of Internal Affairs of Russia, Rokossovskia Street, 20, Krasnoyarsk, 660131, Russia.

Vladimir Potop: <http://orcid.org/0000-0001-8571-2469>; vladimir_potop@yahoo.com; Ecological University of Bucharest, Bucharest, Romania.

Roman S. Nagovitsyn (Corresponding author): <http://orcid.org/0000-0003-4471-0875>; gto18@mail.ru; Glazov State Pedagogical Institute named after V.G. Korolenko; Pervomaiskaya Street, 25, Glazov, 427620, Russia.

Elena A. Zemba: <http://orcid.org/0000-0003-1656-3791>; zembaelena@rambler.ru; Reshetnev Siberian State University of Science and Technology, Krasnoyarsky Rabochy Av. 31, Krasnoyarsk, 660014, Russia.

Aleksander P. Knyazev: <http://orcid.org/0000-0002-7911-1226>; legkatlet@mail.ru; Udmurt State University, Universitetskaya St. 1, Izhevsk, 426034, Russia.

Irina I. Orlova: <http://orcid.org/0000-0001-6118-0672>; matiz270@mail.ru; Krasnoyarsk State Medical University named after professor V.F. Voyno-Yasenetsky, P. Zeleznyak, 1, Krasnoyarsk, 660022, Russia.

Tatyana I. Ratmanskaya: <http://orcid.org/0000-0001-9544-1674>; tanyabaulina@rambler.ru; Siberian Federal University, 79 Svobodny pr., Krasnoyarsk, 660041, Russia.

Sergii S. Iermakov; <http://orcid.org/0000-0002-5039-4517>; sportart@gmail.com; Department of Sport, Faculty of Physical Education, Gdansk University of Physical Education and Sport; Kazimierza Górskiego 1, 80-336 Gdańsk, Poland.

Cite this article as:

Aleksander Osipov, Vladimir Potop, Roman Nagovitsyn, Elena Zemba, Aleksander Knyazev, Irina Orlova, Tatyana Ratmanskaya, Sergii Iermakov. Indicators of physical activity and fitness of male students at Russian universities. *Physical education of students*, 2020;24(1):40–46.

<https://doi.org/10.15561/20755279.2020.0105>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited
<http://creativecommons.org/licenses/by/4.0/deed.en>

Received: 20.12.2019

Accepted: 25.01.2020; Published: 04.02.2020