

Publication date: 01.09.2021

DOI: 10.51871/2588-0500_2021_05_03_19

UDC 796.011.1

PHYSICAL FITNESS OF INFORMATION TECHNOLOGY EMPLOYEES OF THE FIRST PERIOD OF ADULTHOOD

A.V. Dubovik, I.Yu. Gorskaya, D.A. Savchak

Siberian State University of Physical Culture and Sports, Omsk, Russia

Key words: physical condition, physical fitness, health-improving classes, information technology employees.

Annotation. The intensification of labor activity, the performance of various roles in society place increased demands on the physical condition of employees. Currently, in labor activity, the organism of an employee in the field of information technology is forced to function in conditions of a movement deficit, which are necessary to maintain their performance. The aim of the study was to identify the features of physical fitness of information technology employees in the first period of adulthood. The study of the physical condition of 80 (41 women, 39 men) information technology employees in the first period of mature age was carried out. The features of physical fitness of employees of the sphere of information technology of the first period of adulthood were revealed. The heterogeneous composition of the studied groups, revealed in the course of the study, indicates the need to substantiate a differentiated approach in the implementation of health-improving physical culture classes for this category.

Introduction. The professional activity today requires significant psychophysical loads from employees in various working fields. A successful modern employee, who mastered their profession and has enough professional skills and competences and who has good physical fitness, can adapt faster to constantly changing conditions to perform professional activity more successfully, to be competitive, and preserve the level of health and performance. Despite the intensification of the labor's intellectuality today, the physical component remains relevant, since it decreases fatigue and increases mental performance [1].

The intensification of labor activity, the performance of various roles in society place increased demands on the physical condition and the physical fitness, since it is an important component of the performance [2]. The increase of the amount of mental labor, physical inactivity and lifestyle changes towards reducing physical activity lead to a deterioration of metabolic processes and affect the organism's state in whole [3].

One of main tendencies of the modern society is a high level of informational support. More and more experts in the field of information technology are needed. In order to operate in this field, a certain physical fitness is required, since long-term static loads provide serious loads on the musculoskeletal apparatus [4]. Currently, in labor activity, the organism of an employee in the field of information technology is forced to function in conditions of a movement deficit, which are necessary to maintain their performance [5].

Physical activity plays an important role for each profession and any age; this issue is also reliable for information technology employees in the first period of the adulthood [6]. During the last decade, various types of health-improving physical culture classes, which have a specific effect on the functional state, the physical fitness level, constitution and the psychophysical state, became more popular among adult population [7]. However, it is needed to acquire data on the specificity of the physical fitness level of a certain employee group for an adequate planning and implementation of health-improving classes.

The aim of the study was to identify the features of physical fitness of employees in the field of information technology in the first period of adulthood.

Methods and organization. The study's methods: theoretical analysis and gathering of the scientifically methodological data; pedagogical testing; mathematical statistics methods. We used generally accepted tests, which are implemented in physical culture practice, to identify the physical fitness level of information technology employees [8]. The pedagogical testing was conducted on the base of the Department of Natural Sciences of the FSBEI "Siberian State University of Physical Culture and Sports". Eighty employees in the field of information technology in the first period of adulthood (41 women, 39 men), who work in the IT company LLC "Tamtek", located in Omsk, participated in the study.

Results and discussion. To solve the issue of studying indicators of physical fitness of employees, we conducted tests on revealing the physical fitness level. When examining indicators, taking the age into account, the group was divided into several periods: 20-25 years, 26-30 years, 31-35 years for comparison. The results were compared with mean normal values for the given age group.

An ambiguous level of physical fitness was revealed in different indicators in the studied groups (Table 1, 2). Thus, the analysis of the fitness level among women in comparison with mean normal age-based values show decreased results of testing strength- and coordination-based abilities in all examined age groups (Table 1). Indicators of speed-strength abilities of women, which were evaluated according to the "standing long jump" test, are insignificantly lower than normal values. The analysis of mean group indicators of flexibility show a compliance of the physical fitness level of female employees with normal values of the appropriate age.

Endurance indicators (general and special endurance) among female employees comply with normal values, except for the step-test in the selection of 31-35 year old women.

Men revealed the mean level of the development of strength-based abilities in all age groups in accordance with the right hand dynamometry test (Table 2). Speed-strength abilities of male employees in all age groups were decreased in comparison with normal values of the appropriate age. The results analysis of coordination-based abilities test also show a decreased level of indicators in all male employees of all studied age groups.

Table 1

Physical fitness indicators among female employees in the field of information technology in the first period of adulthood ($M \pm \sigma$)

Indicator, units	IT employees (n=41)			Mean normal age-based values		
Age, years	20-25 (n=14)	26-30 (n=13)	31-35 (n=14)	20-25	26-30	31-35
Strength-based abilities						
Dynamometry, right hand, kg	20±5,7	21,3±6,2	18,5±6,9	25-33		
Dynamometry, left hand, kg	20,3±5,5	19,7±6,8	17,2±7,3	23-30		
Speed-strength abilities						
Standing long jump, cm	140,5±37,6	143±26,3	125,1±41,1	143-172	137	131
Flexibility						
Trunk bending from the standing position cm	13±1,6	9±12,6	9,4±10,1	8-12	7	6
Endurance						
Step-test, c.u.	71,2±12,2	66,7±11,9	59,5±19,1	65-79		
Strength endurance						
Curl-ups for 1 min, the amount of times	37±9,4	32,4±6,7	28,6±10,1	30	21-24	17-20
Coordination-based abilities						
Romberg test, tandem pose, s	21,3±12,2	21,6±13,2	18±12,2	30-50		

When conducting the step-test, it was revealed that this indicator corresponds to the mean level of physical fitness in 20-25 year and 26-30 year old women. It was lower than the mean level of physical fitness and the speed of recovery processes in 30-35 year old women. In male employees of all age groups, this indicator corresponds with the mean level of recovery. It is notable that 30-35 year old male employees have the highest indicator among all age groups. These indicators show

that the speed of recovering the organism is average among men after short-term physical loads. Restoration indicators appeared to be decreased in 30-35 year old female employees.

It is needed to note that testing results of female (according to all tests) and male (according to most test) employees in the first period of adulthood have a pronounced downward tendency. A decrease of indicators is registered from the first age group of 20-25 years to the third age group of 31-35 years, which is possibly related to a decrease of motor activity and decrease in the number of functional capabilities.

Table 2

Physical fitness indicators among male employees in the field of information technology in the first period of adulthood ($M \pm \sigma$)

Indicator, units	IT employees (n=39)			Mean normal age-based values		
	21-25 (n=17)	26-30 (n=12)	31-35 (n=10)	21-25	26-30	31-35
Strength-based abilities						
Dynamometry, right hand, kg	36±7,4	43±9,6	37,7±7,3	35-50		
Dynamometry, left hand, kg	30,5±4,8	38,7±8	34,6±6,4	32-46		
Speed-strength abilities						
Standing long jump, cm	192,5±34,8	197,5±35,3	165,5±33	227-241	219	209
Flexibility						
Trunk bending from the standing position cm	-0,3±14,4	-0,6±11,5	-6,1±13,7	7-10	6	5
Endurance						
Step-test, c.u.	71,7±8,6	69,5±11,1	72,4±7,9	65-79		
Strength endurance						
Curl-ups for 1 min, the amount of times	34,3±6,3	32,8±8,3	29,2±8,8	41-45	36-40	31-35
Coordination-based abilities						
Romberg test, tandem pose, s	30,3±23,1	27±16,1	22,8±16,1	30-50		

It was revealed during the study that the inter-group spread of testing results values is expressed on a high level, which indicates an unevenness of the physical fitness level among employees in the field of information technology. Thus, according to most tests in examined age groups, a certain part of men and women has a significantly high level of physical fitness, but a part of them with a decreased level of indicators in some tests makes up a third of the total number. For example, mean values of the “trunk bending from the standing position” indicator was within

normal values among female employees. Moreover, the analysis of the inter-group distribution according to fitness levels demonstrates that 23% of women have a decreased level of flexibility, 29% of women showed the high level of flexibility (Fig. 1). For example, indicators of the “trunk bending from the standing position” test were lower than normal values in all male age groups. Nonetheless, the analysis of the inter-group distribution of results according to fitness levels show that the flexibility indicator is not sufficiently developed in 66% of men, 10% of men correspond to normal values, 24% show the high fitness level (Fig. 2). Such manner of distributing the results of the test for fitness levels was revealed in most used tests.

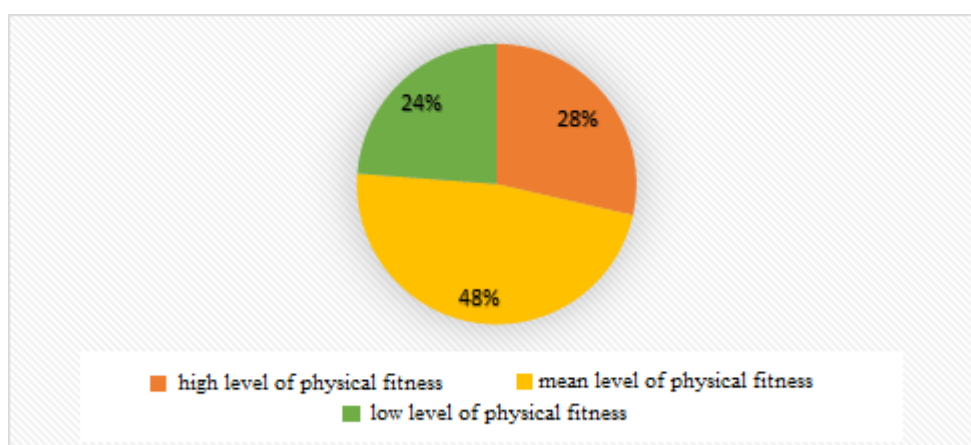


Fig. 1. Percent ratio of women in the first period of adulthood (IT employees, n=41), who have a different level of physical fitness when performing the trunk bending, in %

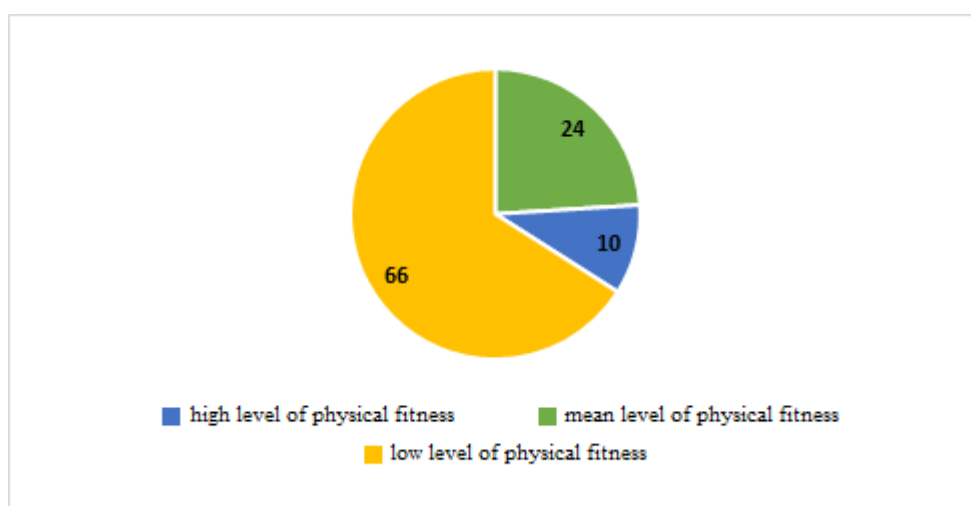


Fig. 2. Percent ratio of men in the first period of adulthood (IT employees, n=39), who have a different level of physical fitness when performing the trunk bending, in %

The revealed fact indicates a necessity to use a differentiated approach within the process of planning and implementing health-improving physical culture classes for information technology employees due to the pronounced uneven level of physical fitness.

Conclusion. Therefore, physical fitness of information technology employees has a number of features. It was revealed that separate indicators of physical fitness correspond to normal values in comparison with mean age-based standards. However, a decreased level of testing results, which was unevenly pronounced in selections of different age and sex, was revealed in a number of indicators. It was also revealed that with age there is a decrease in the level of physical fitness caused by the intensified physical inactivity, static working position of information technology employees, absence of adequately organized physical activity for most employees. The level of the development of coordination-based abilities in both groups show a non-stable psychophysical state caused by high psychomotor and sensory loads among this category of people. The study's results characterize physical fitness of information technology employees in the first period of adulthood and can be used for dosing and planning physical loads. The heterogeneous composition of the studied groups, revealed in the course of the study, indicates the need to substantiate a differentiated approach in the implementation of health-improving physical culture classes for this category.

References

1. Monakhova E.G. Features of physical training of students of the Information Technology Faculties / E.G. Monakhov // CETERIS PARIBUS. – 2016. – № 4. – P.69-71.
2. Antiphenkova I.V. Optimization of physical culture and health-improving activities of office employees in modern conditions of the functioning of the financial organization / I.V. Antipenkova, A.V. Kireeva // Scientific notes of the Lesgaft University. – 2016. – № 11 (141). – P.19-24
3. Imanova O.V. A comprehensive methodology for health-improving aerobic classes for 25-35 year old women: author. Dis ... Cand. Ped. Sciences / O.V. Imanova // Volgograd. – 2008. – 22 p.
4. Stepanenko A.A. Features of physical culture and motor activity for students studying programming / A.A. Stepanenko, E.V. Egorcheva, I.V. Chernysheva // Successes of Modern Natural Science. – 2013. – № 10. – P. 190-191.
5. Malyutin G.V. Office gymnastics for mental labor workers / G.V. Malyutin, I.A. Dubovitskaya, L.V. Ivanova // The TSU Bulletin. – 2014. – № 5 (133). – P.4.
6. Ermakova E.G. The role of industrial gymnastics in reducing the development of industrial diseases / E.G. Ermakova // International Journal of Humanities and Natural Sciences. – 2020. – № 6-1. – P.115-119.
7. Kukoba T.B. Differentiated approach in health-improving workout for 20-35 year old women based on the use of isotonic exercises, taking somatotype into account / T.B. Kukoba // ONV. – 2009. – № 6 (82). – P. 183-186.

8. Egorova M.A. Functional tests: guidelines for the course "Basics of Medical Control" / M.A. Egorov // FSBEI of VSE "Bryansk State School (College) of the Olympic Reserve". Bryansk: [b. and.]. – 2013. – 48 p.

Spisok literaturey

1. Monakhova E.G. Osobennosti fizicheskoy podgotovki studentov fakul'tetov informatsionnykh tekhnologij / E.G.Monakhova // CETERIS PARIBUS. – 2016. – №4. – S. 69-71.

2. Antipenkova I.V. Optimizatsiya fizkul'turno-ozdorovitel'noj deyatel'nosti ofisnykh sotrudnikov v sovremennykh usloviyakh funktsionirovaniya finansovoj organizatsii / I.V. Antipenkova, A.V. Kireeva // Uchenye zapiski universiteta Lesgafta. – 2016. – №11 (141). – S.19-24

3. Imanova O.V. Kompleksnaya metodika zanyatij ozdorovitel'noj aerobikojs zhenshchinami 25-35 letnego vozrasta: avtoref. dis.kand. ped. nauk / O.V. Imanova // Volgograd. – 2008. – 22 s.

4. Stepanenko A.A. Osobennosti fizicheskoy kul'tury i dvigatel'noj aktivnosti dlya studentov-programmistov / A.A. Stepanenko, E.V. Egorycheva, I.V. Chernysheva // Uspekhi sovremennogo estestvoznaniya. – 2013. – №10. – P. 190-191.

5. Malyutin G.V. Ofisnaya gimnastika dlya rabotnikov umstvennogo truda / G.V. Malyutin, I.A. Dubovitskaya, L.V. Ivanova// Vestnik TGU. – 2014. –№ 5 (133). – S. 4.

6. Ermakova E.G. Rol' proizvodstvennoj gimnastiki v snizhenii razvitiya proizvodstvennykh zabolevanij / E.G. Ermakova // Mezhdunarodnyj zhurnal gumanitarnykh i estestvennykh nauk. –2020. – № 6-1. – S.115-119.

7. Kukoba T.B. Differentsirovannyj podkhod v ozdorovitel'noj trenirovke s zhenshchinami 20-35 let na osnove ispol'zovaniya uprazhnenij izotonicheskogo kharaktera s uchetom somatotipa / T.B. Kukoba // ONV. – 2009. №6 (82). – S. 183-186.

8. Egorova M.A. Funktsional'nye proby: uchebnoe posobie po kursu «Osnovy vrachebnogo kontrolya» / M.A. Egorova // FGBOU SPO «Bryanskoe gosudarstvennoe uchilishche (kolledzh) olimpijskogo rezerva». Bryansk:[b. i.]. – 2013. – 48 s.

Information about the authors: Alena Viktorovna Dubovik – Post-graduate Student of the Siberian State University of Physical Culture and Sports, Omsk, e-mail: alena-92@yandex.ru; **Inessa Yur'evna Gorskaya** – Doctor of Pedagogical Sciences, Professor of the Department of Natural Sciences of the Siberian State University of Physical Culture, Omsk, e-mail: mbofkis@mail.ru; **Dar'ya Aleksandrovna Savchak** – Candidate of Pedagogical Sciences, Senior Lecturer of the Siberian State University of Physical Culture and Sports, Omsk.