

Original Article

The physical training of the youth in the context of the complex implementation of “Ready for Work and Defense”.

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Abstract:

In the Russian Federation, an attempt was made to raise the physical activity of the youth by restoring the physical complex “Ready for Work and Defense” (GTO), which had been previously active in the Soviet Union. It was revealed that a significant part of the country's population including the young people (18-35 years old) are experiencing quite substantial difficulties in passing the test qualifying standards of the GTO complex. The purpose of the article research is to develop an effective individually-differentiated method of the physical preparation of the young people (18-35 years old) for the successful reach of the qualifying standards of the GTO complex.

The research participants are the young people (n=219) they are the students, masters' and undergraduate students of the universities aged 18-24 years old (n=112) and 25-35 years old (n=107). The young people were divided into control (CG, n=109) and experimental (EG, n=110) groups. During 5 months (April – August 2019) the young people were engaged in PA 5 training per week. CG members were engaged in various sports games. For EG participants, PA training sessions were built on the basis of an individually differentiated method of the physical fitness proposed by the authors. The volume and intensity of the load PA were adjusted according to the level of physical fitness of the EG participants. The selection of physical exercises was carried out taking into account the harmonious development of the basic physical qualities of the young people. The evaluation of the effectiveness of the methodology proposed by the authors of the article was carried out by comparing the results of the CG and EG participants passing the qualifying standards of the GTO complex at the beginning and at the end of the research period. The statistical processing of the research results was carried out using the statistical analysis software SPSS20.

The analysis of the data showed that EG participants reliably ($P<0.05$) exceed the CG participants in the level of physical fitness for the successful reach of the GTO qualifying standards in both age groups: 18-24 years old and 25-35 years old. The use of the method of physical training of the student youth will significantly increase the level of development of the basic physical qualities of the students in the context of the introduction of the physical training and sports complex GTO.

Key words: Preservation of health, physical activity, youth, students, individualization, Complex "Ready for Work and Defense".

Introduction

Increase in the pace of modern scientific and technological progress and the activation of social changes that negatively affect the younger generation which requires successful adaptation to the new conditions of life (Anjali & Sabharwal, 2018) requires finding the new methods of organizing such an important area as physical culture responsible for preparing a person for life, for the formation of his physical and health potential. The one of the most important conditions is the need to make fundamental changes in its traditional content which is unclaimed in many cases by the young people (Sliwa et al., 2017). It is known that the level of physical and functional fitness of a significant part of the modern young people aged from 18 to 30 years does not correspond to the optimal parameters (Averyanova & Zaytseva, 2018). According to the studies of the physical and functional status of the modern youth show a deterioration in blood circulation and respiration (Korobeynikov et al., 2018; Kozhokar et al., 2018) and an increase in body weight of a significant number of students (Koziarska-

Rościszewska & Wiśniewska, 2017; Osipov et al., 2018). In recent years it has been revealed that there has been a significant decrease in the level of physical activity among the young people (Zimmermann-Sloutskis, Wanner, Zimmermann, & Martin, 2010) and the adult population of the developed countries (Molanorouzi, Khoo, & Morris, 2015) due to the insufficient motivation to the classes of physical activity (PA) (Kudryavtsev, Kramida, & Osipov, 2016). In this situation, there is a significant contradiction between a wide range of the scientific research that focuses on the self-improvement of the physical training of the modern young people (Kharisov, Nenasheva, Aminov, Cieslicka, & Mushketa, 2017) and the insufficient development of the technological foundations of this process (Nagovitsyn, Chigovskaya-Nazarova, Miroshnichenko, & Senator, 2018). Currently, a physical culture and sports process should be organized aimed at improving the physical qualities of the young people through the modernization of physical education classes (Osipov, et al., 2016). Implementing the process of modernizing physical education classes on the basis of didactic possibilities of using individually differentiated technologies will increase its effectiveness by improving the development indicators of the basic physical qualities increasing the level of students' functional capabilities and motivating the young people to the physical culture activities (Kozina et al., 2015; Kozina, Iermakov, Bartík, Yermakova, & Michal, 2018). Modernization of physical culture activities of the young people through individualization of physical education (PE) of the students will provide modern needs of the young people for the PA (Faidevych, 2015; Osipov, Vonog, Prokhorova, & Zhavner, 2016). In this aspect, the introduction of individually differentiated technologies in the process of forming a harmoniously and physically developed personality will ensure the effectiveness of PE and generally increase the number of relatively healthy and able-bodied people (Leifa & Zheleznyak, 2017).

The experts emphasize that for a successful daily life, a person needs a daily physical activity of a sufficient intensity, frequency and power (Ivashchenko et al., 2016; Schmidt, Tittlbach, Bös, & Woll, 2017). To improve the level of PA of the students, the teachers use various types of fitness and sports fitness on the physical education classes for the student youth (Chen, Chen, Sun, & Zhu, 2013; Mokrova et al., 2018; Vashchuk et al., 2018;). At the same time, it has been revealed that some foreign specialists in the field of physical education of the individual use various non-linear complexes of the physical exercises actively to form motor skills of the students starting from the school (Moy, Renshaw, & Davids, 2016; Ivashchenko et al., 2017; Lee, Chow, Button, & Keat Tan, 2017). However, it should be emphasized that physical activity is implemented mainly through mobile and sports games in these complexes (Kilborn, Lorusso, & Francis, 2016; Lee et al., 2017). Experts recommend that the educational institutions conduct various activities more often related to the games which are popular among the young people (Brophy et al., 2011; Mohammed, 2018).

In the Russian Federation, in order to strengthen the physical health of the population, an attempt was made to encourage the citizens to engage in a regular PA by restoring the "Ready for Work and Defense" sports complex operating in the Soviet Union (Kabachkov, Zyurin, & Osminin, 2017). However, the results of population testing including the young people - university students show that the most students cannot cope with the qualifying standards of the GTO complex (Fursov, Sinyavskiy, Beznosko, & Gerega, 2018). Scientists argue that for the successful implementation of the GTO complex in the educational institutions, the serious measures are needed to correct the psychophysical training of the modern young people studying at colleges and universities (Vorontkov, Nikulin, Babintsev, Shapoval, & Goncharuk, 2018). Some experts have expressed the opinion that the methods of students' fitness testing are rather doubtful in the matter of improving PA and promoting healthy lifestyles for the students. According to the foreign scientists, fitness tests that determine the suitability of the students for PA are the wrong way to promote PA among the young people (Cale & Harris, 2009). In the scientific community there are also opinions that fitness testing of the students can be a useful tool for successfully motivating the young people to practice PA (Wiersma & Sherman, 2008). Thus, the Russian scientists argue that the newly adopted GTO system is able to implement a competency-based approach building effective health promotion competencies quite successfully among the population through the physical actions and regular PA (Nagovitsyn, Vladykina, & Senator, 2015; Zelenin, Opletin, & Panachev, 2018).

It should be noted that the success of this system will be possible only with the development and use of the effective techniques for the implementation of the need for physical activity among the population contributing to the preparation for the successful reach of the qualifying standard GTO complexes in different age categories. The scientists note that for the successful implementation of the standard indicators of the GTO complex the individualization is necessary both for the test tasks for various categories of the population and the methods of physical preparation of the citizens for the implementation of this complex (Kudinova, Karpov, Kudinov, & Kornev, 2018). In connection with the above, the authors of the article determined the purpose of the research - the development and study of the level of effectiveness of using an individually-differentiated method of increasing the level of physical fitness of the student youth (18-35 years old) to the successful reach of the qualifying standard complex "GTO".

Material & methods

Participants.

The studies were conducted with the full-time and part-time students, masters' and undergraduate students of the several higher educational institutions of the Russian Federation. All participants (n=219) gave

their consent to participate in the research and were divided into two age categories: 18–24 years old (n=112) they are mostly full-time students, masters' and postgraduate students and 25–35 years old (n=107) – the extramural students, masters' and postgraduate students. These age categories are selected on the basis of the staged implementation of the All-Russian sports complex "GTO"

Procedure.

At the first stage (March 2019), both age categories were divided into 2 groups: experimental (EG) and control (CG). The participants were divided into groups based on the indicators of physical fitness. The group EG (n=110) includes young people aged: 18-24 years old (n=57) and 25-35 years old (n=53). The group CG (n=109) included participants aged: 18-24 years old (n=55) and 25-35 years old (n=54). At this stage, a preliminary analysis was conducted of the level of physical development of the research participants according to the standards of the complex "GTO" using the method of the tests. The analysis of the obtained data was carried out by the levels: high, medium and low. Each level is the compliance of the obtained indicators with the standards of the GTO complex: high (gold badge), medium (silver or bronze badge) and low (without badge).

At the second stage of the study (April-August 2019), the participants in both groups were engaged in physical and sports activities. The basis of the PA of the investigated persons in CG consisted of sports games (basketball, volleyball, football) in the open air. In the EG, an individually differentiated method of increasing the level of physical fitness of the young people was implemented. The basis of the PA participants of the EG consisted of training sessions of various levels of intensity aimed at the development of basic physical qualities and motor abilities. It should be noted that the volume of targeted systematized exercise in both groups was at least 320-380 minutes during the week. The young people conducted 5 training sessions per week.

It should be noted that within 5 months, the EG participants implemented 3 cycles of 6-week workouts with a 1-week break to monitor the results (compliance with the regulatory framework of the GTO) and outdoor activities. Depending on the test results of the GTO complex, the EG participants were provided with an individual PA performance trajectory in the next cycle of training effects. The CG participants also recorded the results of physical fitness at the end of each 6-week cycle but the structure and intensity of their training sessions did not change.

During the study for each training cycle, an individual trajectory of training tasks was offered to the EG participants depending on:

- from the level of general physical development of the young people (compliance of physical fitness indicators with the regulatory framework of the GTO complex: high - gold GTO badge, medium - silver or bronze GTO badge, low - inconsistency of physical fitness parameters with the regulatory framework of the GTO complex);
- from the personal level of weekly physical activity of the young people to the start of research (high - 4–5 physical training and sports per week, medium - 3 physical training and sports per week and low - 1–2 physical training).

The workload at the EG training was regulated by the several levels of intensity: high (2+), above average (1+), medium (+) and below average (1–). The level of intensity was regulated by the time for completing the training tasks in the PA classes. In training with a level (1–), the lesson time was not more than 60 minutes (10 minutes were assigned for warm-up, 30 minutes for various sports activity and at least 20 minutes for exercises aimed at developing flexibility). The classes with a level (+) were a variety of sports games. The duration of the training is at least 70–75 minutes (10 minutes - warm up, 45–50 minutes - playing activity, 15–20 minutes - exercises that promote the development of flexibility).

At level (1+), PA classes were either sports games of the sufficient length (a football match) or gym training. The training duration is at least 90 minutes. In the training for the development of strength abilities and special endurance, the training time was divided into a warm-up - 15–20 minutes, strength exercises - 45–50 minutes and flexibility exercises - 15–20 minutes. The organization of strength training exercises was a circuit training - the consistent implementation of certain strength exercises for the development of the main muscle groups and strength endurance with adjustable intervals of the load and rest. At the (1+) level of training, the following exercises were performed: bench press (50–60% maximum weight), squatting (50–60% maximum weight), abdominal exercises, barbell pull in the slope (40–50% maximum weight), jumping to a height of 70–90 cm, jerk of a weight weighing 16–24 kg and running with weights (30–40 kg). Each exercise was performed for 1 minute with a rest after completion of the cycle for 1–2 minutes. The number of cycles – 6-7 at each training.

At the (2+) level, the circular training was characterized by a greater intensity: the weight of the projectiles was 60–70% maximum, the height of the bollard for jumps was 90–120 cm, the rest after the exercise cycle was reduced to 1–1.5 minutes and the number of cycles was increased to 8–9 in each session. By the way, such trainings are similar in nature of the load and exercises with CrossFit training the effectiveness of which is in raising the level of physical fitness of the students is emphasized by the experts (Kudryavtsev et al., 2018). The load intensity of each training cycle in the EG group is presented in Table 1.

Table 1. The load distribution of EG participants for each training cycle

Level of the test person	High						Medium						Low					
Cycle weeks	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Training intensity	+	1+	2+	1+	2+	+	1-	+	1+	+	2+	+	1-	+	1+	1-	1+	+

At the third stage (September 2019), tests of the compliance of the level of physical training of CG and EG participants to the standard indicators of the GTO complex were carried out. The tests consisted of passing the qualifying standard tests of the “GTO” complex: pull-ups, jerk weights, 100 meters running, long jump from the spot, etc. (Kabachkov et al., 2017).

Statistical analysis. At the same time the statistical processing of the research results was carried out using the statistical analysis software SPSS20.

Results

The results of the level of compliance of indicators of the physical readiness of the studied young people to the regulatory framework of the GTO complex at the beginning (March - 2019) and the end of the research (September - 2019) are presented in Fig. 1 (March - 2019) and Fig. 2 (September - 2019).

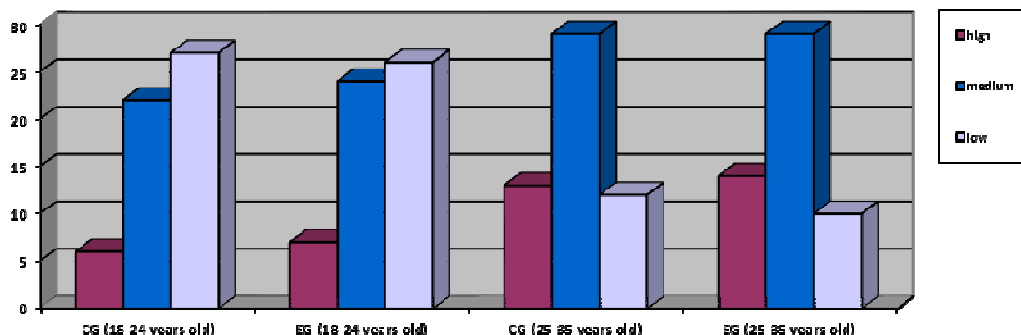


Fig. 1. Assessment of the level of physical fitness of CG and EG in accordance with the qualifying standards of the complex "GTO" at the beginning of the research (March - 2019)

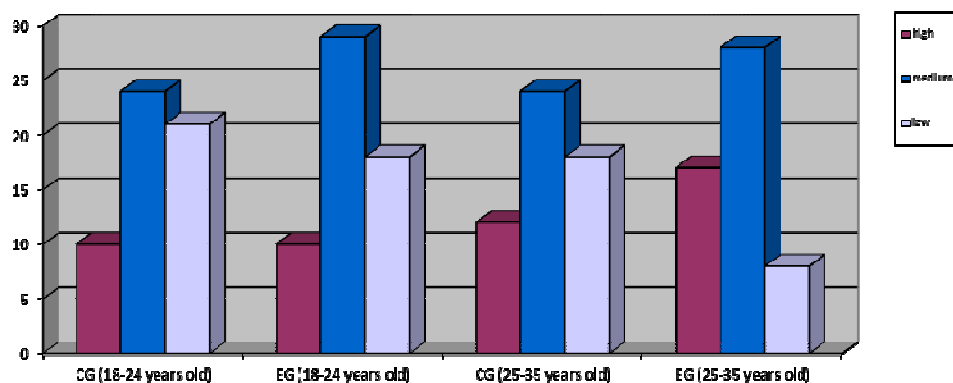


Fig. 2. Assessment of the level of physical fitness of CG and EG in accordance with the qualifying standards of the complex “GTO” at the end of the research (September - 2019)

At the beginning of the study, the level of physical readiness of the test young people of the CG and EG in both age groups was approximately the same. The statistical analysis of X^2 showed no meaningful accuracy of the differences between CG and EG in terms of the development of physical qualities in accordance with the qualifying standards of the GTO complex. At the end of the study, a significant difference ($P < 0.05$) in the level

of physical fitness of the young people between CG and EG in the age group 18-24 years was found. It was revealed that in this age group there was a significant increase in the number of EG participants who increased their level of physical fitness (from low to medium) compared to CG. The number of CG and EG participants who showed a high level of physical fitness in accordance with the regulatory framework of the GTO complex is approximately the same in both groups.

It should also be noted that among the CG and EG participants aged 25-35, at the end of the study, a significant ($P<0.05$) advantage in terms of physical fitness level (medium and high level) in favor of the EG participants was found. There was a significant ($P<0.05$) decrease in the results of the level of physical fitness in accordance with the standards of the GTO complex (transition from an average level to a low level) among CG participants in this age group.

Discussion

The unanimous views of the domestic specialists in the field of physical education (PE) individuality on the need for the introduction into the everyday life of the citizens of the physical education and sports complex "GTO" are revealed. However, further there are quite significant differences in the methodological recommendations on the use of the GTO complex and the choice of means of physical training of the population for the successful implementation of the tests of this complex. Some experts argue that the modern Russian GTO complex is rather complicated to carry out a significant part of the population of the Russian Federation (Kabachkov et al., 2017). It has been revealed that young people (students) have difficulty in passing certain tests due to the lack of physical fitness and lack of technical skills (Kolokoltsev, Iermakov, & Potop, 2017; Fursov et al., 2018). Consequently, according to some authors, it is necessary either to change the test scale of the survey of the complex in order to lower the required results or to abandon the series of tests that present the greatest difficulty for passing (Voronkov et al., 2018). It was revealed that in the most educational institutions there are no comprehensive targeted methods of the physical training for the young people to reach the GTO tests successfully and the students' PA level on the physical education classes is not sufficient for the harmonious development of the physical qualities and motor abilities (Zyurin, Bobkova, Morozov, & Polyievsky, 2018).

According to the authors of the article, in order to pass the tests of the GTO complex successfully, it is not necessary to correct or cancel a part of the tests, but to the individual physical training of the population, in particular the students directed to the development of basic physical qualities and motor abilities. It is the lack of means and methods of individually-differentiated physical training that has a negative impact on the results of taking the test standards of the GTO complex in a significant part of the students. The literature indicates that even military personnel in elite organizational units make extensive use of the means and methods of the individual physical training along with the compulsory exercise to increase their physical and functional fitness (Anderson et al., 2017).

In the scientific literature, there are studies on the need to use new non-linear complexes of the physical exercises for the formation of motivation competencies for those involved in a successful functioning (Moy et al., 2016; Podrigalo et al., 2017). It should be noted that the composition of these complexes mainly includes various options for playing exercises from sports and outdoor games (Lee et al., 2017). The experts believe that the use of various mobile and sports games will allow maintaining a high level of motivation of the young people to engage in PA and will ensure the necessary level of the physical activity of the students. A systematic increase in PA will not bring tangible benefits to human health. An increase in PA should be sought to promote special physical fitness (Tittlbach, Jekauc, Schmidt, Woll, & Bös, 2017). According to the authors of the article, the techniques that increase the level of physical fitness of the young people to various physical tests significantly (reaching the standards of the "GTO" complex) should include not only increasing the level of physical activity of the young people, but also the balanced development of the basic physical qualities. Since the test base of the GTO complex includes the exercises that characterize the level of development of all physical qualities of a person, the method proposed by the authors contributes to the harmonious development of the physical qualities of the student youth.

The studies show that to prepare for the reach of the qualifying standards of the complex "GTO" the various physical exercises are used. According to some experts, priority should be given to the exercises aimed at developing the strength, speed and endurance of the participants (Arshinnik, Dudka, Tkhorev, & Shubina, 2017). The individually-differentiated method of raising the level of physical fitness of the young people proposed by the authors, combines the training devoted to the purposeful development of strength and speed-strength abilities successfully, general and special endurance (circuit training) and training aimed at developing coordination and speed-strength abilities as well as general endurance of the participants (sports games).

The experts note that the total duration of training sessions aimed at a targeted increase in the indicators of the development of muscle strength, speed and motor skills should be at least 22-23 weeks (Lesinski, Prieske, & Granacher, 2016). In our studies, a positive result was achieved already in 20 weeks of training which can be explained both by a fairly high initial level of preparedness of some of the young people for passing the GTO tests and by the high efficiency of the methods proposed by the authors to increase the level of physical fitness of the young people. It should be noted that the need to use complex PE which has a sufficient duration (from

several weeks) and is aimed at enhancing the physical fitness of the young people as the experts note (Campos, Campos, Bezerra, & Pellegrinotti, 2017; Kudryavtsev et al., 2018). Scientists also insist on the need to make changes to the PE process of the student youth and to modernize PE taking into account the implementation of the standards of the GTO sports complex in the activities of the educational organizations (Anishenko et al., 2018).

Conclusions

In conclusion, we may say that both domestic and foreign specialists in the field of PE point out the need for a substantial increase in the weekly level of PA population. To improve the level of PA, the scientists recommend both variable non-linear exercise complexes based on the various sports games as well as various types of the recreational and sports fitness. In the Russian Federation today, there is an active introduction of the physical training and sports complex "GTO" into the activities of state and educational institutions. However, the low level of physical fitness of a significant part of the population including young people (18-35 years old) does not allow the optimal use of this complex to increase the level of PA students. The individually differentiated method of increasing the level of physical fitness, proposed by the authors of the article, allows to increase the level of physical fitness of student youth significantly in accordance with the regulatory framework of the GTO complex. The use of this technique contributes both to raising the level of PA and the growth of the physical form of the young people and to the success of the implementation of the GTO complex in the activities of the educational institutions of the Russian Federation.

Conflicts of interest - If the authors have any conflicts of interest to declare.

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