

The possibility of a significant increase in the level of motor activity in students with the use of the potential of computer technology

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Abstract

Purpose: a significant increase in the level of everyday motor activity of students. It is intended to use the collection and exchange of data on the daily mobility of students in popular online networks and mobile applications. Identify the prospects for using social networks and mobile applications in the control and management of the body weight of students.

Material: The study involved students (n = 30, age 19-20 years). Admission to the group occurred by sending out invitations to social networks. The main criteria for selecting female students are the same age and absence of diseases. Also taken into account the indicators of the body weight of female students. It was used the following methods for assessing the level of physical condition of female students: control over the body weight (weighing), time parameters of recovery of the body after performing a test load (sample with 30 sit-ups). To evaluate the results of the studies, the Wilcoxon signed-rank test was used.

Results: multidirectional dynamics of changes in body weight data was detected among female students. In the control group, there was a slight increase in body weight. In the experimental group, a significant decrease in body weight was found. The recovery time significantly decreased by an average of 7±1 seconds (experimental group) and by 2±1 seconds (control group). The volume of daily motor activity of female students of both groups significantly increased. The students of the experimental group have higher rates of motor activity.

Conclusions: the possibilities of using social networks and mobile applications are shown to increase the daily motor activity of students and the possibility of correcting body weight.

Keywords: health, motor activity, students, social online networks, obesity prevention, mobile applications.

Introduction

Studies show that the level of physical activity and physical fitness of young people has a positive impact on the level of their academic performance [1]. This is typical for university students [2]. To maintain health and successful life, young people need at least 150 minutes of motor activity per week [3]. Scientists recognize that in recent years, the low level of everyday motor activity (MA) and a significant decrease in the proportion of maximum aerobic physical activity are the main problems for the health and well-being of modern youth [4]. It was revealed that a significant decrease in the level of MA is directly related to the enthusiasm of modern young people by the Internet [5], computer games and social networks [6]. The problem of the low level of everyday MA of youth is today relevant for countries around the world. For example, in China, only 3 out of 10 young people aged 15-16 years adhere to the recommended daily level of physical activity – 60 minutes per day or more. The remaining youth does not comply with these recommendations and is at risk of obesity. About 12% of young people already have this disease. This is a serious problem [7]. Effectively solve it, experts suggest starting a search for new, effective strategies for promoting and increasing the level of physical activity among young

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people: boys [8], children and adolescents [9]. Such strategies should be based on the individualization of the education of young people, taking into account their somatotype, functional parameters. Such strategies should be aimed at increasing of daily MA [10]. Maintaining the optimal level of students' MA requires appropriate control of body weight. Such control is an effective way to prevent the development of obesity [11].

Analysis of the scientific literature shows that standardized programs of physical education of students are not able to solve the problem of deterioration of physical health [12]. Scientists note that educational institutions should provide a much wider range of physical education programs: schoolchildren [13] and students [14]. Modern students prefer a wider range of sports and fitness than the administration can offer them [15] and teachers [16]. It is known that modern young people consider: modern fitness, aerobics, dancing [17], functional training, athletic gymnastics [18]. Specialists note that educational systems in China [19] and Sweden [20] are gradually changing their direction. Instead of the methods of sports perfection, the methods of improving fitness are also used. Young people also consider it necessary to add interesting events to the educational process with the identification of the winner. The availability of a choice of physical activity programs will be especially important for female students. This is due to the fact that most girls

have a lower base level of physical fitness compared to boys [21]. There is a number of data that the possibility of social communication and comparison of the results of exercise in online networks can significantly increase the level of daily MA of female students [22]. It is noted the advisability of introducing computer technologies in the process of physical education of modern youth [23]. Unfortunately, the integration of these technologies into student education programs is still at the stage of its development and needs additional research [24].

There is an increasing number of scientific studies suggesting the use in modern physical education of young people of modern computer technology [25]: Internet and video games [26]. Specialists note that informatization of the process of teaching students today is a necessary requirement of modern European [27] and world educational standards [28]. There are scientific studies proving that the use of various web applications increases the level of physical activity [29]. A number of scientists argue that the availability of social support from other users of social networks is an important condition for increasing the level of independent physical activity of each participant [30]. Other experts emphasize the rather low role of social support in online networks for increasing the level of MA of users [31]. In modern online networks, there are available platforms, through which effective medical and preventive effects on the lifestyle and movement activity of target populations are possible [32]. However, reviews of scientific literature show that there is no obvious evidence of the positive impact of social networks on the physical condition of people with chronic illness or obesity [33]. At the same time, scientists believe that additional research is needed to study the impact of social networking technologies on the health of users. It is necessary to prove the connection between theoretical reasoning and the analysis of the actual impact of social online networks on the health of users [34].

In some of the USA colleges and universities, scientists use mobile applications for smartphones [35]. It should be noted that teachers in Western Europe, Asia and North America make extensive use of information, communication and mobile technologies in the learning process [36]. Students have one of the most popular gadgets today, wrist monitors, showing the level of physical activity during the day. The use of such monitors by students allows young people to maintain a certain level of physical activity for a long time [37]. There are a number of studies on the prospects of using smartphones and mobile applications to improve the level of everyday MA [38] and manage their weight [39]. There are studies that prove the positive impact of mobile technology on the results of maintaining the user's weight at the recommended level [40]. However, the positive effect of using mobile technologies and the Internet for most users is quite short-term – not more than a year [41]. Also, application developers should focus on the factors that contribute to the following: people getting involved in regular physical activity and fitness; adaptation of mobile applications for different population groups [42]. Many

users in the future are disappointed in these applications because of the outdated design and lack of updates.

Further scientific research is needed to increase the effect of computer technology on body weight control and the prevention of obesity in young people. Scientists should focus their efforts on the best use of electronic devices and mobile applications to measure and collect data on the level of MA of users [43].

Hypothesis. The authors suggested that a significant increase in the level of students' MA will be possible with the active use of popular in the youth social networking environment and other mobile applications for information exchange. According to the authors of the article, the daily exchange of data on their physical activity will contribute to a significant increase in the level of students' MA. The authors of the article also planned to find additional evidence of allegations about the prospects of using online networks and mobile technologies in preventing obesity and correcting the body weight of young people.

Purpose of the study. Raising the level of daily MA of students by sharing information in popular among today's young people social online networks and mobile applications. An additional goal is to confirm the hypothesis about the effectiveness of using mobile applications and online networks in monitoring and controlling the body weight of users of these applications.

Materials and methods.

Participants: The study involved students (n = 30, age 19-20 years). Admission to the group occurred by sending out invitations to social networks. The main criteria for the selection of girls: a similar age and the absence of diseases. Also taken into account the indicators of the body weight of female students. To maintain the purity of research, it was decided to recruit female students with a body weight of 48 to 56 kg. The students successfully passed a medical examination in the University clinic and had no contraindications for exercising. All the students gave their consent to participate in the research. As a result of the recruitment, the students were divided into 2 equal groups: group 1 (control group - n = 15), group 2 (experimental - n = 15). The average body weight of female students was just over 53.2 kg.

Organization of the study: Studies were conducted during the academic semester (September 2016 - February 2017). All the girls were offered daily to perform certain physical exercises for 30-45 minutes continuously. Students could perform 3 types of exercises for their personal choice: running (at least 4.5 km), swimming in the pool (continuously with different styles of at least 850 m), work on bikes (at least 8.5 km). It should be noted that the students of both groups performed daily exercises individually and at a convenient time for themselves. To increase the level of motivation of female students, the organizers decided to conduct research in the form of a contest with the identification of the winner group. The girls were given a condition – daily exercises should be performed by the whole group. The absence of any of the participants in the studies was recorded by the

coordinators. At the end of the research, the data on the performance of the exercises by the students were calculated to determine the winners of the competition. Exercise was recorded by the coordinators of the studies on the video. The video files of the control group sessions were recorded by the research coordinators to compile daily reports and analyze the information. The video files of the experimental group were recorded and daily uploaded to various popular among the students of the Institute of Oil and Gas SFU social online networks of the Russian-speaking Internet segment: VKontakte, Mail.ru, Odnoklassniki, Viber. Users of such files could write comments and post scores in online networks to participants of the experimental group for performing daily physical exercises. The main criteria for obtaining an assessment from users were the dynamics and intensity of the exercises by students.

In the course of the studies, the following parameters were also evaluated: the dynamics of changes in body weight values, the recovery time of the body of students after the test load (a one-stage test with 30 sit-ups). The girls were weighed every week. A sample with 30 sit-ups was conducted monthly. Also the total time of daily exercise for the students of both groups was taken into account during each month of research.

Statistical analysis: To evaluate the results of the studies, the authors used the Wilcoxon signed-rank test.

Results.

The evaluation of the results of the average changes in body weight of female students, showed multidirectional dynamics of changes in body weight values in groups. In the control group, an increase in the average body weight was found (from 53.26 ± 0.38 kg to 53.44 ± 0.34 kg). However, this increase was recognized by the authors as insignificant. In the experimental group, the average body weight of girls was reliably ($P < 0.01$) decreased (from 53.41 ± 0.14 kg to 52.76 ± 0.12 kg). The indices of the recovery time of the female body after the test load was performed reliably ($P < 0.01$) improved in both groups. In the control group, the recovery time was reduced (from

112 ± 1 seconds to 110 ± 1 seconds). In the experimental group, the recovery time of the pulse decreased on average from 113 ± 1 seconds to 105 ± 1 seconds.

In the course of the studies, a significant ($P < 0.05$) increase in the number of female students of both groups was observed, which daily performed the proposed MA. In the control group, the number of students engaged in MA every day increased from 11.7 ± 0.1 to 12.0 ± 0.1 . In the experimental group, the number of students engaged in MA every day increased from 12.2 ± 0.1 to 12.6 ± 0.1 .

The main results of the studies are presented in Table 1.

Separately, it is worth considering the data on the level of daily MA of female students. From the beginning of the study, the indicators of the daily MA level were reliably ($P < 0.01$) higher in group 2. Two months later, there was a significant decrease in the indicators of daily MA for both groups. Participants themselves noted that the decrease in the level of MA is caused by catarrhal and viral diseases (ARD, influenza, etc.). In December, there was an increase in daily MA in both groups: the level of daily MA in Group 2 was significantly higher ($P < 0.01$). A significant decrease in the level of MA in groups was registered in January. The students explained the decline in the New Year holidays and the preparation and passing of the examination session. In February, the level of MA increases again in both groups: the level of daily MA of students of group 2 is much higher. Students of this group explain a higher level of MA by the presence of a large number of comments and evaluations of their activities in social online networks and mobile applications. The fact of assessing the level of MA of students gave extra motivation for doing physical exercises. The girls of the control group, in turn, noted a certain lack of motivation for daily MA activities. According to the students of Group 1, the lack of competitiveness and the opportunity to show their level of physical fitness to other participants played a significant role in the final results of the research.

The data for estimating the total time for performing physical exercises are shown in Fig. 1.

Table 1. Dynamics of changes in research parameters.

Indices	group №1 (n=15)		group №2 (n=15)	
	September	February	September	February
Body weight (kg)	53.26 ± 0.38	53.44 ± 0.34	53.41 ± 0.14	$52.76 \pm 0.12^*$
Recovery (sec)	112 ± 1	$110 \pm 1^*$	113 ± 1	$105 \pm 1^*$
Daily MA (min)	351 ± 1	$362 \pm 1^*$	366 ± 1	$378 \pm 1^*$
Engaged in activities (daily)	11.7 ± 0.1	$12.0 \pm 0.1^{**}$	12.2 ± 0.1	$12.6 \pm 0.1^{**}$

Note * - $P < 0.01$ - level of significance; ** - $P < 0.05$ - level of significance.

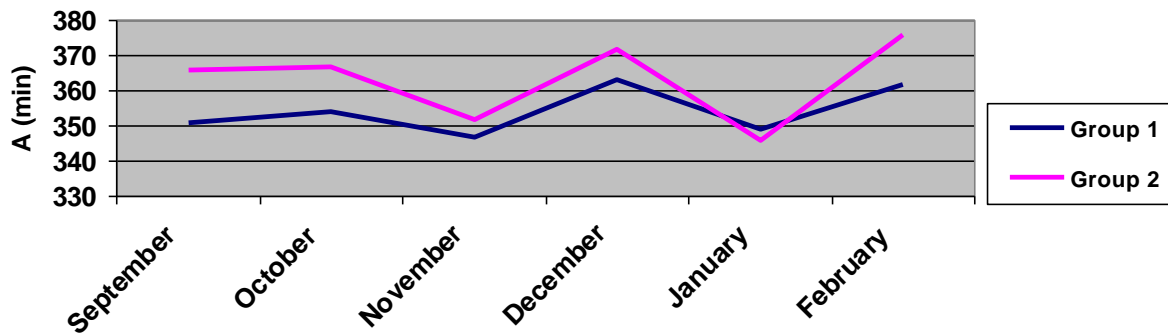


Fig. 1. Data on the level of MA of students: 1 - group number 1; 2 - group number 2; A - daily physical activity (minutes).

Discussion.

To significantly increase the level of students' MA, scientists recommend to use sports and fitness, popular in the youth environment. These types include fitness aerobics, dancing, athletic gymnastics [18]. It is believed that a high level of interest and motivation for exercising will increase the level of students' MA [7]. However, the conducted studies prove the possibility of a significant increase in the level of daily MA of female students without using these species. Using student mobile applications and social online networks when performing monotonous and cyclic aerobic exercise can not reduce the level of motivation to increase MA.

To significantly increase the number of students (Internet users) facilitates the exchange of data on daily motor activity and the possibility of evaluating MA by other users. There is a low level of influence of social support for users of online networks on increases in motor activity [31]. However, the role of social support should not be underestimated. Girls of the experimental group note that it is the positive assessments and user comments that have influenced the increase in the level of daily physical activity. We found that the fulfillment of student physical exercises evaluated a significant number of users. This gave considerable motivation to the girls of the experimental group. It should be noted that experts do not deny the need for social support for users of mobile applications to increase the level of motor activity. It is about raising the level of social competition in online networks.

The research carried out by the authors confirms the hypothesis that mobile applications and social networks can be used to control and control the body weight of young people. During the period of studies in the experimental group, a significant ($P < 0.01$) decrease in body weight parameters was revealed. The obtained results confirm the reports on the possibility of the positive influence of modern mobile technologies on maintaining the body weight of users at the recommended level [40].

Scientists say that modern conditions are characterized by a significant decrease in the level of physical activity of young people and the presence of a global threat of obesity. Therefore, any measures to increase the level of physical activity will be methodologically effective: there is no ideal tool for studying this health parameter [44, 45]. The importance of using the potential of computer technologies and social online networks to promote public health ideas [46] and disease prevention [47] is confirmed by scientific research.

Conclusions.

1. There has been a significant deterioration in the level of physical development and health of student youth. Therefore, new methods of increasing the level of everyday motor activity of students are needed among young people. Studies have revealed the possibility of a significant increase in the daily mobility of students: the collection and placement of information about everyday MA in social online networks and mobile applications.
2. The researches of the authors confirm scientific hypotheses about the prospects of using the Internet segments: social networks and mobile applications for effective body weight correction and obesity prevention in students. At the same time, development of all new online and mobile fitness applications is required. This is due to the fact that modern young people are experiencing a rapid loss of interest in independent exercise and sports.

Conflict of interest.

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

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