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The role of physical fitness in the teaching and learning process of students in grades 10-11th

Ashurova Sevara Ilkhom kizi[1]

[1]Samarkand state university, Samarkand, Uzbekistan

Abstract

Purpose: development and experimental substantiation of the methodology of general physical training of school-children - 11th grade students.

Methods: Analysis and generalization of literature data, analysis of competitive activity using request monitoring methods, forecasting and modeling based on expert evaluation, instrumental research methods and methods of mathematical statistic

Results: In the experimental group, both boys and girls increased chest circumference from 92.9±1.75 to 97.1±1.45 cm ($p<0.05$) and from 84.2±0.71 to 87.2±0.65 cm ($p<0.05$), respectively. The indices of GEF and hand strength were significantly changed in boys and girls of the experimental group. No changes in physical development were found in the control group. When assessing the physical fitness of schoolchildren of the control and experimental groups its changes were revealed.

Conlcusion: In order to achieve an optimal level of physical fitness of senior school pupils, it is necessary to integrate into the teaching process a methodology that includes the acquisition by schoolchildren of theoretical knowledge, skills and abilities of physical culture, increasing the level of health, physical fitness and efficiency, formation of positive motivation to physical activity and healthy lifestyle.

It is recommended to implement the methodology of general physical training in the form of lectures and practical training sessions in the discipline of 'Physical Culture', physical education and recreational activities outside school hours, independent exercises in the daily regime.

The following requirements should be taken into account when constructing the physical load of students in training classes:

- motor activity should be aimed at increasing overall endurance by increasing the volume and intensity of the load. It is advisable to concentrate endurance training at the beginning of the school year for 1.5-2 months and conduct it in the fresh air. The achieved level of general endurance should be maintained throughout the school year with the help of aerobic cyclic exercises.

- It is recommended to shift the emphasis on speed and strength training to the second half of the school year. It includes both physical exercises with weights and various jumping exercises (jumping over barriers, multi-skips, etc.), mobile games and relay races.

Keywords: motor activity, systematic physical exercises, volleyball, development methods, technical and tactical training, criteria of the volleyball.

Introduction

The modern lifestyle of schoolchildren comes into conflict with the physiological needs of the organism, and the deficit of motor activity leads to a decrease in educational and labour activity. Computerization of the population's everyday life and, in particular, complex school curricula in high schools intensify the learning process and sharply limit the motor activity of students.

The urgency of this problem continues to grow, and one of the main reasons for this may be the imperfection of the developed curricula on physical training of students. The solution of this problem is necessary, first of all, for the scientifically grounded choice of the most effective means and regimes of loads for senior schoolchildren, sufficient for the development of methods of general physical training, ensuring the achievement of the required level of physical fitness.

Methods

The following methods were used to solve the tasks set in the work:

- analysis of scientific and methodological literature;
- testing of physical development, motor fitness, physical performance;
- questionnaire survey;
- pedagogical experiment;
- methods of mathematical statistics.

Analysis of scientific and methodological literature

In the process of working on the research topic, scientific and methodological literature on the problem of formation of general physical training of schoolchildren was analysed and generalised, as well as works on issues in the field of theory and methods of physical culture, pedagogy and peculiarities of the training process.

The study of the literature allowed us to create an idea of the essence of the research problem. The conducted analysis and generalisation of scientific and methodological literature confirmed the relevance of our chosen topic and allowed us to formulate the working hypothesis, set the goal and objectives of the study.

Testing of physical development, motor fitness, physical efficiency

The level of physical development of schoolchildren was determined according to the method proposed by G.K. Kukolevsky (1975).

The strength of the hand muscles was determined using a hand dynamometer DRP90. The dynamometer was taken in the hand with the dial facing inwards. The arm was stretched out to the side at the shoulder level and maximally squeezed the dynamometer. Two measurements were taken on each arm and the best result was recorded. Stanic strength was determined using dynamometer DS-500.

Physical fitness testing was carried out using informative and reliable motor tests (V.L. Karpman, 1988; V.N. Seluyanov, 2008; M.M. Kovylin et al., 2010, etc.):

General endurance was determined by the distance covered by the students in a 6-minute run.

A place for a 6-minute run was marked out in the sports hall. At the command 'March!' a group of subjects started running along the marked distance. After 6 minutes, the command 'Stop!' was given. At this command, the students stopped and the number of laps completed and the difference in metres from the start line on the last lap was recorded. To determine the length of the distance covered, the number of laps was multiplied by the number of metres in one lap and the difference from the start line on the last lap was added.

2. Speed, strength and coordination characteristics were determined by long jump from a place and shuttle run.

The result of the long jump from a place was fixed by the distance from the place of pushing off to the nearest point of touching by any part of the body. Three consecutive attempts were evaluated and the best result was taken into account.

Shuttle race 9m+9m+15m+15m was held in the sports hall. At the command 'March!' the subject ran to the 9 m mark, took a cube, returned and put it on the start line; then ran to the 15 m mark, took the second cube and returned to the start line. Everyone was entitled to two attempts.

Results and discussion

To identify the need and motivation of students to physical culture and sport, a questionnaire was developed and used (Appendix 1). The questionnaire consisted of blocks of questions that provide an opportunity to assess the need and motivational sphere of students to physical activity.

When interpreting the questionnaire data, we applied the system of evaluation of the studied components of physical culture and recreation activity (V.I. Tropnikov, 1989).

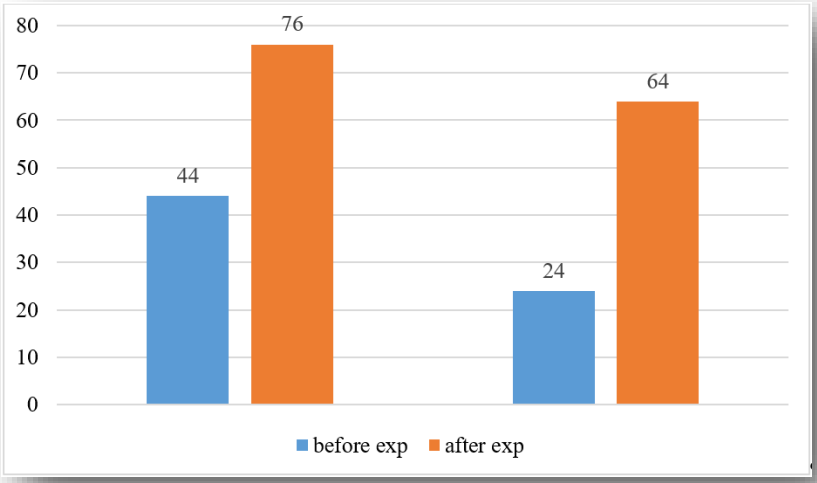
The conducted research (tab. 3) showed

Table 1. Change in technical readiness of schoolchildren during the experiment, points

Sections	Level	Experem group M±m	p	Control group M±m	p	p¹
Gymnastics	Initial Final	3,2±0,36 4,8±0,32	<0,05	3,2±0,45 4,0±0,34	>0,05	>0,05 <0,05
Athletics	Initial Final	3,2±0,54 4,6±0,45	<0,05	3,2±0,63 3, 9±043	<0,05	>0,05 <0,05
Football	Initial Final	3,2±0,46 4,7±0,36	<0,05	3,3±0,34 3,5±0,44	>0,05	>0,05 <0,05
Elements of basketball technique	Initial Final	3,2±0,44 4,6±0,42	<0,05	3,1±0,36 3,3±0,34	>0,05	>0,05 <0,05
Elements of volleyball technique	Initial Final	3,1±0,32 4,76±0,38	<0,05	3,2±0,36 3,32±0,44	>0,05	>0,05 <0,05
Elements of swimming technique	Initial Final	3,0±0,34 4,66±0,44	<0,05	2,9±0,44 3,2±0,48	>0,05	>0,05 <0,05

that among high school students such motives as health promotion - 76.2%, development of physical qualities and improvement of figure -

Fig 1. Change in the experimental group pupils' need for physical education and sports activities (Attendance at sectional classes)



55.4% each, formation of willpower and concentration - 45.2% - are mainly highlighted

It should also be noted that schoolchildren did not assess the importance of physical training for expanding their horizons and acquiring knowledge. This gives grounds to judge that there is a contradiction between the motives for health promotion by means of physical culture (1st place in the significance level) and broadening of outlook and acquisition of knowledge - 15.3%.

The results of the sociological survey showed that a significant part of students spend more than 6 hours a week watching TV programmes and working on the Internet and others.

These data confirm that physical education and sports seem to a significant number of senior pupils to be a secondary occupation. This circumstance, in our opinion, is connected with insufficient development and organisation of the subject 'Physical Culture' in schools.

During the experiment, a comparative assessment of technical readiness of students of the control and experimental groups on the basic motor actions of the programme of the discipline 'Physical Education' was carried out. Technical readiness in the experimental group was significantly higher than in the control group.

The results of the study show that in the control group the indicators characterising the motor activity of schoolchildren tended to decrease. In the experimental group there were reliable positive shifts in all indicators. Motor activity increased from 4,66±1,22 to 10,64±1,78 hours/week ($p<0,05$), accordingly energy consumption increased from 3140,23±242,76 to 3800,34±320,67 kcal ($p<0,05$).

The analysis of the results of the conducted research shows that at the end of the experiment the pupils of the control and experimental groups had changes in physical fitness, which were of different character depending on the construction of the content of the educational and training process. The combination of compulsory classes on general physical training with physical self-improvement caused reliable positive dynamics in the physical fitness indicators of 11th grade pupils.

Pupils of the experimental group began to feel a greater need for independent exercise. The number of people attending sectional classes (basketball, volleyball, football, athletics, etc.) increased by 32%. 40% more schoolchildren started to engage in physical fitness activities (morning gymnastics, swimming, walking and running, cycling, etc.) on their own. No significant changes occurred in the control group.

Conclusion

The analysis of literary sources and educational and methodical materials on the problem of physical education of general education school students has revealed a number of unfavourable features in the physical training regime of schoolchildren. It has been established that the well-known deficit of motor activity in university students arises and is formed already in school years. Many authors have revealed the low level of efficiency of the current system of physical training of students of general education institutions. The solution of this problem

does not meet the appropriate level of preparedness of high school students, as well as healthy lifestyle of students, which is extremely relevant and requires the development of fundamentally new methodological approaches to the formation of working programmes of physical training for specific categories of students.

The methodology of general physical training of schoolchildren - students of 11th grades has been developed and experimentally tested. The method is aimed at acquiring special knowledge, skills and abilities, improving the level of health, physical fitness and efficiency, forming a positive motivation for physical activity and healthy lifestyle, promoting the achievement of a proper level of physical readiness.

The developed methodology is implemented in the educational process of students at school. The organisational forms of its implementation are: training classes; mass sports and physical education and health-improving activities outside school hours; independent physical exercises in the daily regime.

The obtained experimental results testify to the effectiveness of the developed methodology of formation of general physical training of schoolchildren and expediency of its use in the educational process

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AUTHOR BIOGRAPHY:



Sevara Ilkhom kizi ASHUROVA

Employment
Student of PhD at Samarkand state university

Degree
MD

Research interests
Voleyball players, university sport clubs, Analyzing of sport competitions, running, scientific analysis