PERFECTION OF PHYSICAL FITNESS OF LYCEUM WITH ADVANCED MILITARY PHYSICAL
TRAINING PUPILS BY MEANS OF SPORTS WRESTLING
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Abstract. **Purpose:** to theoretically-methodically substantiated application of sport wrestling means in physical training of lyceum with advanced military physical training pupils. **Material:** in pedagogic observation 10 form pupils (n=119) participated. In pedagogic experiment 49 pupils participated (experimental group, n=24 and control group, n=25). **Results:** the weakest points of lyceum’s pupils were found. Experimental program combined common means of physical qualities’ training (70% from total time of lesson) and means of sport wrestling (30% of lesson time). In the frames of the program four typical complexes of exercises for physical culture lessons were worked out. Complex of exercises for wrestler’s general physical fitness was applied in main part of lesson, which took 15-20 minutes. **Conclusions:** wrestler’s physical training shall be oriented on development of different physical qualities: strength, quickness, endurance, flexibility, coordination. Optimal construction of general physical training process facilitates comprehensive and proportional development of pupil’s physical qualities.

**Key words:** physical fitness, sport wrestling, pupils, lyceum, program.

**Introduction**
Physical training is a targeted controlled process of military officers’ physical perfection, which is realized, considering specificities of their military-professional functioning [15, 26-28]. Physical training system shall be interpreted as organized in compliance with combat activity requirements combination of interconnected components, which are conceptual basis; the process of military officers and control over this process.

Physical education and pre-service training of lyceum pupils is realized as per academic programs of comprehensive schools with traditional methodic approaches and pedagogic conditions, which are rather ineffective concerning optimization of physical conditions [5, 8, 19] and personality’s characteristics of senior pupils [19, 21].

Recent time the problem of pupils’ physical perfection has been being regarded in a number of research works. In particular, by many authors much attention was paid to content and structure of school age children’s physical training, its orientation and organization [10, 23]. Other authors [6, 7, 12, 16, and 23] note that new social, economic and ecological conditions require studying of a number of pedagogic influences and methodic principles. It shall ensure increase of children’s workability and physical fitness.

In our previous works we regarded the following: peculiar features of physical fitness of lyceum with advanced military-physical training pupils; level of physical qualities of lyceum with advanced military-physical training pupils [1, 2]. We recommended main directions of lyceum pupils’ educational process correction. It was found that by index method the best boys’ results were observed in index of quickness. The worst results were registered by power index results. Optimization of pupils’ physical fitness permits to increase their physical potential.

Analysis of researches and publications [13, 14, 17, 22, 24, 25] shows that there are unsolved the problems of theory, methodic and organization of physical education in system of personnel training for Ministry of Defense. Actually there is no sufficient scientific data on physical training of military profile specialists; on their physical condition in domestic scientific-methodic literature.

The purpose of the research is to theoretically-methodically substantiate application of sport wrestling means in physical training of lyceum with advanced military physical training pupils.

**Material and methods**
**Participants:** in pedagogic observation 10 form pupils (n=119) participated. In pedagogic experiment 49 pupils participated (experimental group, n=24 and control group, n=25).

**Organization of the research:** the research was fulfilled on the base of State lyceum with advanced military-physical training, named after Heroes of Krut (Lviv).
At first stage we studied physical fitness level of State lyceum with advanced military-physical training pupils [17–18]. Besides, we substantiated and worked out program of physical trainings with application of sport wrestling means. 

At second stage we carried out comparative pedagogic experiment for testing of effectiveness of the worked out program. The experiment was conducted in second semester of academic year from January 20th to May 23rd, 2014. The pupils of the 1st group were trained by the worked out by us program, which combined commonly accepted means of physical qualities’ training (70% of total time of lesson) and sport wrestling means (30% of lesson time).

Statistical analysis: the results were processed with standard methods of mathematical statistic. We determined mean arithmetic and standard deviation; confidence of differences by Student’s t-criterion; temps of increment of physical fitness indicators by Braudy’s formula.

Results of the research
State system of tests and normative for assessment of Ukrainian population’s physical fitness is a basis of standard requirements to population’s physical fitness as criterion of physical health, life activity, ability for efficient work and defense of Motherland. The main purpose of State tests for assessment of Ukrainian population’s physical fitness is stimulation and further development of physical culture among all population strata for ensuring of their health [9].

Analyzing the data of our research we were guided by the following scale for assessment of lyceum pupils’ physical fitness: 1 – 3 points – low level; 4 – 6 – average; 7 – 9 – sufficient; 10 – 12 points – high level.

Sufficient level of physical fitness was registered by three indicators from 11. They included: angle of emphasis on bars (7.29±4.53 points), pressing ups on bars (7.64±4.14 points), 3000 meters run (8.14±3.88 points). By the rest of indicators we registered average level of physical fitness. The results varied in average from 4.57±7.92 points (the rise of the coup on crossbar) to 6.96±3.82 points (throw of grenade F-1).

Thus, physical fitness level is assessed as average. For improvement of lyceum pupils’ physical fitness it is necessary to pay attention to training all physical qualities.

At next stage we substantiated the structure and content of physical training program for lyceum pupils with application ports wrestling means. Besides, we studied its influence on physical fitness of lyceum with advanced military-physical training pupils.

The worked out program of pedagogic experiment implies application of sport wrestling means in educational process of pupils. Methodological principles of the worked out by us program is division of lesson into two parts. In one part of lesson (70% of lesson time) pupils fulfilled main tasks, and in other (30% of lesson time) lyceum pupils trained means of sport wrestling for development their quickness, strength, coordination and flexibility.

Sport wrestling is a kind of sports, in which physical fitness level is one of the main and important factors, determining success of sport perfection (in our case – physical fitness) [3].

In the frames of the program we worked out four typical complexes of exercises for lessons by topics:

- Gymnastic (exercises with weights, with loading by own body mass; acrobatic exercises; general warming up exercises; special wrestling exercises; easy wrestling; exercises for stretching);
- Light athletic (exercises with loading by partner’s body mass, general warming up exercises, special wrestling exercises, skipping rope exercises);
- Athletic exercises (usage of weights, exercises on simulators, with barbell, general warming up exercises, special wrestling exercises, stretching);
- Volleyball (exercises with filled balls, exercises with expanders, general warming up exercises, special wrestling exercises, stretching).

Complex of general exercises of wrestlers physical trainings was used in main part of lesson, which took 15-20 minutes; method of training – repeated, interval. For special wrestling exercises we used frontal method, for easy wrestling kinds – game and competition methods.

Analysis of research’s results witnesses that as on beginning of experiment there were no confident differences between 1st and 2nd groups (p>0.05).

By most of indicators (long jump from the spot and from run, rise by strength and rise of the coup; angle of emphasis on bars; 100 meter, 1000 meters and 3000 meters run) second group pupils were ahead of the first group (though not confidently, p>0.05).
For the period of experiment positive changes took place practically in all indicators of physical fitness, though tems of increment were different (see fig. 1).

By the end of experiment 1st group pupils were ahead of 2nd group by all indicators of physical fitness. In 2nd group temps of increment varied from 1.22 to 49.15%. The highest level was observed in the following indicators: rise of coup (49.15%) and by strength (41.13%) on crossbar, chin ups (26.54%), pressing ups on bars (23.59%), and angle of emphasis on bars (14.77%). The rest of indicators were within 1.22 – 6.92%.

Fig. 1. Increment of physical fitness indicators of 1st group pupils (n=25) and 2nd group (n=24) in the period of pedagogic experiment
1 – long jump from the spot; 2 – long jump from run; 3 – chin ups; 4 – rise by strength on crossbar; 5 – rise of coup on crossbar; 6 – pressing up on bars; 7 – angle of emphasis on bars; 8 – 100 meters run; 9 – 1000 meters run; 10 – 3000 meters run.

In 1st group the best increment was by indicators of strength of arms and girdle muscles (rise by strength – 109.16%, rise of coup – 108.20%). Increment of arms’ strength (pressing up on bars, chin ups), abdomen muscles (angle of emphasis on bars) were lower: 52.19%, 48.09% and 47.98% accordingly. Indicators of general endurance, quickness and speed power qualities of legs’ muscles had the lowest increment tems (2.44 – 16.47%).

It was found that in 1st group increment temps were much higher, comparing with group 2. It witnesses about effectiveness of the author’s program of physical qualities’ training.

In both groups we observed the lowest increment temps by indicators of speed-power qualities (long jump from the spot and from run), quickness (100 meters run), power endurance (1000 meters run) and general endurance (3000 meters run).

After pedagogic experiment first group pupils were ahead of second group by all indicators of physical fitness. By 7 from 10 indicators differences were confident (p<0.05).

Sufficient level of lyceum pupils’ physical fitness was registered by 3 indicators from 11: angle of emphasis on bars (7.29±4.53 points); pressing up on bars (7.64±4.14 points); 3000 meters run (8.14±3.88 points). By the rest of indicators we observed average level of physical fitness. The results vary in average from 4.57±7.92 points (rise of coup on crossbar) to 6.96±3.82 points (throw of F-1 grenade).
Discussion

Thus, we can state that in our research the following was developed: results of researches, concerning physical condition and physical fitness of senior school age children [4, 18, and 20].

For the first time:
- We experimentally proved effectiveness of methodological approach to working out physical training program for lyceum with advanced military-physical training pupils, which combines traditional means of physical qualities’ training (70% of lesson time) and sport wrestling means (30% of lesson time).
- We substantiated program of pupils’ physical education with priority application of sport wrestling means that facilitates more expressed increment of lyceum pupils’ physical fitness indicators.

Modern requirements of society to youth physical fitness determine need in comprehensive training of physical qualities that is one of main directions of physical education. It significantly facilitates formation of motor skills, required in everyday life. Domestic [7, 15, 23] underline that a person with high physical fitness is characterized by great volume of motor skills and abilities, high functional potentials of cardio-vascular, respiratory and thermo-regulation systems; correct body constitution and healthy life style.

A number of scientists determined main approaches to re-estimation of targets, tasks and content of physical culture lessons in educational establishments. The first – is health related approach, when pupils’ health is of first priority as well as physical condition and physical fitness [11, 21, and 22]. The second approach – is training with training effect being of first priority (mainly at the account of increase of compulsory physical culture lessons) [6, 8, and 23]. The third approach is curriculum – extra curriculum, which is based on rational correlation of physical culture lessons and sport training in circles [14, 17].

Pupils shall be offered system of motor (physical culture) functioning according to commonly accepted principles. These principles reflect specific laws of physical education construction. Its orientation is on development of motor skills, formation of special physical culture knowledge; understanding of demand in physical culture practicing. The mentioned system is the most perfect in technology of sport training. That is why adapted and scientifically comprehended introduction of sport training elements in physical education process is one of directions of perfection of pupils’ physical functioning organization [14, 17].

Sports activity provides wide spectrum of simulation of conditions and opportunities, which can perfectly be used for moral-will training. During physical training it is necessary to overcome pain and fatigue, keep self-control, regulate emotions, sustain workability in unfavorable environmental conditions and etc. Besides, in physical trainings the most radical will qualities’ cultivation is load, level of which is regulated by the character of the fulfilled exercises. With it, it should be practiced regularly, but not from time to time and gradually increase loads and complexity of tasks. Just because of this fact physical exercises shall be considered to be the best mean of physical fitness ensuring and method of will qualities’ cultivation [7, 29-32].

Wrestler’s physical fitness is oriented on development of different physical qualities: strength, quickness, endurance, flexibility, coordination. Optimal construction of general physical training process facilitates comprehensive and proportional development of pupil’s and sportsman physical qualities. Application of sport wrestling means at physical culture lessons permits to optimize and vary trainings. Physical exercises can be used for solution of general and special tasks of physical training.

Conclusions

1. After pedagogic experiment differences in physical fitness of control and experimental groups became more expressed. Experimental group pupils confidently became ahead of control group by girdle arms muscles’ condition (chin ups, rise on crossbar by strength and of coup, pressing ups on bars), by strength of abdomen (angle of emphasis on bars), quickness (100 meters run), endurance (1000 meters run).

Final testing showed that in experimental group there were confident changes (p<0.05) by all indicators of physical fitness, except general endurance (3000 meters run, t = 1.38).

2. Results of pedagogic experiment witness that author’s program with application of sport wrestling means facilitated confident (p<0.05) increase of physical fitness. The program permits to achieve confidently (p<0.05) increment of physical fitness without increasing training loads.
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Conflict of interests

The author declares that there is no conflict of interests.

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