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## CHANGES IN TECHNICAL PERFORMANCE AMONG SENIOR SCHOOLCHILDREN BY THE RESULTS OF REALIZATION OF A VARIABLE MODULE «WRESTLING»

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### Abstract

*Introduction.* For the recent decades the current syllabi («Physical education for 10-11 forms») have been developed according to the requirements of the current basic and complete secondary education standards, notably they are built according to the module system.

The *aim* is to clarify the changes in technical performance among senior schoolchildren by the results of realization of a variable module «Wrestling».

*Material and methods:* theoretical analysis and synthesis of research and methodological literature and Internet sources; analysis of documental materials; pedagogical testing; pedagogical experiment (the efficiency of the developed variable module «Wrestling» in physical education among senior schoolchildren of comprehension schools was checked); methods of mathematical statistics. 53 students of 10<sup>th</sup> forms (31 boys and 22 girls) and 74 students of 11<sup>th</sup> forms (41 boys and 33 girls) were involved in the research throughout 2017–2019 academic years.

*Results.* The analysis of the results among the boys of 10<sup>th</sup> forms indicates the existence of significant changes of high level ( $p \leq 0.01$ ). In all cases average evaluations were improved by 0.54–0.71 points (16.79% to 22.66% from the initial level). The girls of 10<sup>th</sup> forms were realizing technical and tactical elements standing – turndowns, knockdowns (24.76% improvement from the initial level) and in ground work – hooked turnovers (24.51% respectively) the best. Among the boys of 11<sup>th</sup> forms the improvements of the level  $p \leq 0.05$  was observed accounted for 9.35–18.45% from the initial level. Altogether for the girls of 11<sup>th</sup> forms the changes in evaluations by 10.67–21.13% from the initial level are observed by percentage values.

*Conclusions.* It was indicated that by most technical and tactical holds girls



demonstrate higher relative indicators of improvement. The exception was only when completing turnovers overlapping where boys had better results. The factors of this consist in the better integration of the boys' bodies into work in the beginning of a pedagogical experiment and higher indicators of physical performance making it possible for them to acquire the technique of holds in wrestling more quality already at the start of variable module. The girls were gradually improving both their physical performance and technique of completing the mentioned specific elements of wrestling.

**Key words:** content, means, wrestling, physical education, efficiency.

**Introduction.** Overloading students with school subjects and disaffection with traditional content of PE lessons is an important issue in the system of school education [4, 6, 7, 9]. Doing physical education plays an important role in improving the senior schoolchildren's health since it helps develop stable motivation to preserving their health, improving their physical development and physical performance, balancing mental qualities, etc. Exactly in the course of studying at school a responsible attitude to their own health is originated, important theoretical knowledge and practical skills for further life are laid [5, 12, 15, 17].

The analysis of the literary sources shows that the syllabi («Physical education for 10-11 forms») [6, 10, 11] for the recent decades have been developed according to the requirements of the current basic and complete secondary education standards. The programs were built according to the module system. The focus on realization of the principle of variability including planning of academic material according to age and gender peculiarities among students, their interests, logistics, teaching and methodological and staff support in the comprehensive schools is inherent with them [13, 14, 15, 16].

A range of scientists having

developed and suggested teaching and methodological materials for sport classes in various sports for senior schoolchildren (fencing, horting, etc.) are admirers of the module system of teaching physical education at school [11].

At the same time, urgent issues on expanding the list as well as research and methodological substantiation of variable modules in other sports aimed to follow the principles of modern physical education among student youth remain.

Wrestling is worth considering one of such sports with complex impact on the teenagers' body. Using the means of wrestling upon conditions of comprehensive school will make it possible not only to popularize this sport among youth of Ukraine but also promote developing a stable interest for motion activity and improving physical development [1, 2, 3, 5, 8].

**Connection of the work with research topics and plans.** The research was completed as part of the scientific topic of scientific and research work at the department of theory and methodology of physical education of Lviv State University of Physical Culture for the years 2017–2020 «Theoretical and methodological aspects of optimizing motion activity among different civic groups» (protocol



of 17/11/2016 № 4).

The **aim of the research** is to clarify the changes in technical performance among senior schoolchildren by the results of realization of a variable module «Wrestling».

### **Material and methods of the research.**

*Contingent of the research.* Altogether 53 students of 10<sup>th</sup> forms (31 boys and 22 girls) and 74 students of 11<sup>th</sup> forms (41 boys and 33 girls) were involved in the research throughout 2017–2019 academic years.

*Organization of the research.* Throughout 2017–2019 academic years at Shchyrets I–III degrees comprehensive school № 1 named after the Hero of Ukraine Bohdan Ilkiv of Shchyrets village council an experimental part, exactly a variable module «Wrestling» was introduced into educational process for senior schoolchildren in the subject «Physical education». It was realized throughout one academic half-year.

To determine the level of technical and tactical performance the students were suggested to demonstrate six basic groups of holds. Among them, three standing groups (moves with strikes/ducks, turndowns and knockdowns, throws bent and tucked) and three ground holds (rolling, overlapping and hooked turnovers).

The evaluation was conducted upon conditions of sparring by the tasks (2 periods of 2 minutes) – in the course of conducting the test a student was proposed to complete technical and tactical actions in succession with a few rivals committing conditional resistance («half-effort»). Yet completing technical and tactical holds

approximated to competitive conditions was assessed. The assessment was conducted by three experts (school's teacher, trainer in wrestling and qualified athlete in wrestling) according to visual characteristics (kinematic and dynamic moves and accuracy of their completion).

The task for the students was to demonstrate as high quality of performed actions as possible. The assessments of technical and tactical actions' completion were divided into three groups, notably:

- «excellent (5)» – technical actions (hold, defense, counterhold and combination) are completed with getting ready, firmly, wholly, quickly, with maximal range and fixation in the final phase;

- «good (4)» – technical actions are completed with slight delays, with insufficient compactness of grapples in the course of completing a hold and a covering in the final phase;

- «satisfactory (3)» – technical actions are completed with serious delays, the grapples are failed in the course of completing a hold and a covering of the rival in the final phase. The assessment was conducted in the form of an integral evaluation by the involved experts in wrestling.

*Methods of the research:* theoretical analysis and synthesis of research and methodological literature and Internet sources (informational search was completed and degree of substantiating the problematics of a scientific research was found); analysis of documental materials (the structure and content of the syllabus in «Physical education», the content of variable modules in various sports as well as sport class work for the students of

different age were studied); pedagogical testing (indicators of technical performance among senior schoolchildren were established); pedagogical experiment (efficiency of the variable module «Wrestling» (developed by the author) in physical education among senior schoolchildren in comprehensive schools was checked); methods of mathematical statistics (used for processing the data on different stages of the research).

The research was conducted in accordance with the main principles of bioethics.

**Results of the research and discussion.** Scientific search for substantiating the variable module «Wrestling» was conducted by a few groups of indicators (general, special, technical and tactical performance). In this article the results by the third block of indicators – technical and tactical performance – are given. It characterizes the skills and abilities of

the students acquired in the course of completing the variable module «Wrestling» by the basic sport.

The analyzing of results demonstrated by the boys of 10<sup>th</sup> forms approved the existence of significant changes ( $p \leq 0.01$ ) for all sets of technical and tactical actions. In all cases the average evaluations of the experts were improved on average by 0.54–0.71 points. In turn, it accounted for 16.79% to 22.66% from initial level (table 1). Also it is worth noting that by the relative values of discrepancies, between the holds completed by the students standing or ground no improvement was observed. Our used approach to assessment of a group of holds made it possible to identify the students' skills more quality.

Among the presented groups of technical and tactical actions standing a bit higher absolute and relative indicators were observed for turndowns and knockdowns. A bit lower ones were

Table 1

**Results of boys of 10<sup>th</sup> forms (n= 41) as to determining technical and tactical performance among senior schoolchildren of the experimental group**

№	Test		Results (evaluation, points)							
			before implementing the variable module «Wrestling»				after implementing the variable module «Wrestling»			
			Boys		Girls		Boys		Girls	
			10 form (n=41)	11 form (n=31)	10 form (n=33)	11 form (n=22)	10 form (n=41)	11 form (n=31)	10 form (n=33)	11 form (n=22)
1	standing	moves with strikes/ducks	$\bar{X}$ 3.20	3.42	3.18	3.36	3.73	3.87	3.82	3.82
			m 0.31	0.49	0.30	0.50	0.46	0.51	0.40	0.45
			$\bar{X}$ 3.17	3.32	3.18	3.32	3.83	3.94	3.97	3.77
2	standing	turndowns, knockdowns	m 0.28	0.46	0.30	0.43	0.36	0.36	0.24	0.49
			$\bar{X}$ 3.15	3.45	3.18	3.32	3.71	3.77	3.94	3.77
			m 0.25	0.50	0.30	0.43	0.45	0.45	0.28	0.49
3	standing	throws bent, tucked	$\bar{X}$ 3.20	3.32	3.12	3.23	3.83	3.71	3.85	3.91
			m 0.31	0.44	0.21	0.35	0.32	0.55	0.41	0.50
			$\bar{X}$ 3.15	3.39	3.18	3.41	3.73	3.94	3.85	3.77
4	ground	turnovers overlapping	m 0.25	0.50	0.30	0.48	0.46	0.36	0.41	0.49
			$\bar{X}$ 3.12	3.32	3.09	3.41	3.83	3.81	3.85	3.95
			m 0.21	0.44	0.17	0.52	0.32	0.47	0.36	0.35
5	ground	turnovers hooked	$\bar{X}$ 3.20	3.32	3.12	3.23	3.83	3.71	3.85	3.91
			m 0.31	0.44	0.21	0.35	0.32	0.55	0.41	0.50
			$\bar{X}$ 3.15	3.39	3.18	3.41	3.73	3.94	3.85	3.77
6	ground	turnovers hooked	m 0.25	0.50	0.30	0.48	0.46	0.36	0.41	0.49
			$\bar{X}$ 3.12	3.32	3.09	3.41	3.83	3.81	3.85	3.95
			m 0.21	0.44	0.17	0.52	0.32	0.47	0.36	0.35



for throws bent and tucked, and the lowest for moves (with strikes/ducks). Coordination complexity for realization of a corresponding action can serve the reason for such distribution, since except the existence of strength and speed-strength qualities, an important role goes to their timely realization in time and space.

The analysis of the ground technical and tactical actions' indicators showed that higher increases are more common for the options of turnovers hooked. According to the indicators, the boys of 10<sup>th</sup> forms improved their evaluations for external completion by 22.66% from the initial level. A bit lower improvements of the technique of elements' completion were observed by the groups of turnovers rolling and turnovers overlapping (19.85% and 18.60%, respectively).

The girls of 10<sup>th</sup> forms demonstrated considerable changes in the experts' evaluations where all percentage improvements accounted for 20.00% to 24.76% ( $p \leq 0.01$ ) compared to the initial level. We would remind that as the initial level the indicators gained after the first month of studies was taken, namely the students already had an idea and acquired elementary skills of technical and tactical elements. Also the evaluation was conducted via ternary scale (satisfactory, good, very good) understanding the initial stage of doing this sport.

The girls of 10<sup>th</sup> form acquired and realized technical and tactical holds standing the best on the initial stage of studies – turndowns, knockdowns (24.76% of improvement from the initial level) and ground – turnovers hooked (24.51% respectively). Namely, similar changes for a considerable set of

technical and tactical elements of wrestling of different directions are observed. This approves optimal selection of specific means of wrestling in educational process among senior schoolchildren, notably female students of 10<sup>th</sup> forms within the suggested variable module «Wrestling».

For the boys of 11<sup>th</sup> forms a significant improvement of evaluations for the technique of completing all the elements was observed. However, the levels of the changes' significance were different. Mostly, the improvement was probable at the level  $p \leq 0.05$  and accounted for 9.35% to 16.19% from the initial level. Only for the elements of turndowns and knockdowns it accounted for 18.45% ( $p \leq 0.01$ ) from the initial level. Yet, greater range between the percentage values for improving the evaluations on the technique of completion was observed for the elements standing. Technical and tactical elements ground had more similar increases.

To our opinion, specific discrepancies in indicators can be related to individual tastes among boys towards technical and tactical elements of this or that group and psychoemotional background for completing the exercises within a proposed variable module. Also we consider that improvement of realization technique in conditional grapples could be achieved via organization of internal and/or external competitions involving more students of the corresponding age.

By the results of the girls of the same form we observe also a bit lower experts' evaluations as to the technique of completing specific elements of wrestling.



By most technical and tactical elements the changes of evaluations were at the level of significance  $p \leq 0.05$ . Only in one case (completing a turnover rolling) a higher level of significance was observed accounting for  $p \leq 0.01$ .

By percentage values approximately equal changes in evaluations are observed (10.67–16.00% from the initial level). An exception marked by the improvement of an average group evaluation more than by 20% (21.13% from the initial level) was recorded in the same element – turnover rolling.

We tried to create a complex idea on the efficiency of the suggested structure and content of the variable module «Wrestling» for senior schoolchildren by the results of comparing percentage indicators of the evaluations' improvement by technical and tactical elements (fig. 1).

Comparing percentage indicators of the evaluations' change in completing technical and tactical elements in wrestling denoted that by all of them the highest percentage values were observed among the girls of 10<sup>th</sup> form. Also by most technical and tactical elements relatively to the other

subgroups of the students of the experimental group high indicators of improvement were demonstrated by the boys of 10<sup>th</sup> form.

On this background, the percentage indicators among the representatives of 11<sup>th</sup> forms look lower. By all control characteristics they are inferior to the students of 10<sup>th</sup> forms. Such situation, to our opinion, can be caused by the fact that the students of 11<sup>th</sup> forms had treated completion of the lessons objectives more dutifully which gave them an opportunity to understand the main basic points of technical elements. In turn, mostly having higher indicators of general and special physical performance they demonstrated higher results already in the first testing of technical and tactical performance (gaining higher evaluations from the experts).

At the same time the realization of structure and content of the variable module still had a significant impact on the level of technical and tactical performance (special competences) among the students of 11<sup>th</sup> forms (both girls and boys). However, supporting the thoughts of different specialists [1,

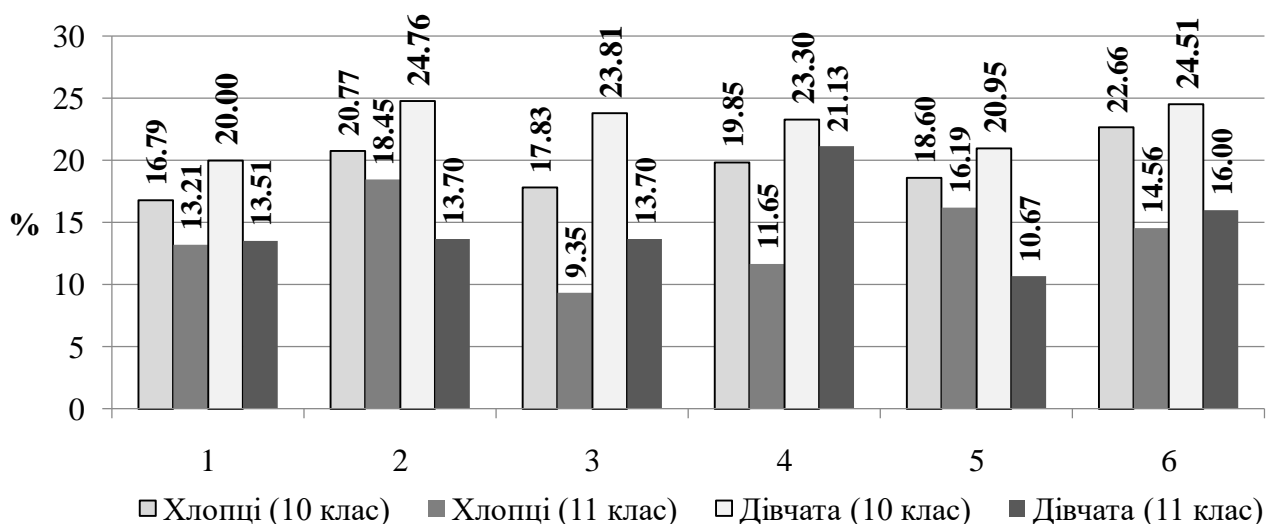


Figure 1. Comparison of relative values on changes of the results of technical and tactical performance among different representatives of the experimental group:

1 – moves with strikes/ducks; 2 – turndowns, knockdowns; 3 – throws bent, tucked; 4 – turnovers rolling; 5 – turnovers overlapping; 6 – turnovers hooked



2, 5, 8], we would emphasize that educational process in comprehensive schools cannot be compared to the sport classes via organization and methodological conditions, basic objectives, and the main aim.

So the present disbalance in increases and lack of further progress are related to standardized amounts of specific workloads which could not be higher objectively.

We consider that involving the senior schoolchildren (notably of 11<sup>th</sup> form) in extracurricular lessons in wrestling it was worth expecting further improvement (by the experts' evaluations) for the technique of completing the mentioned elements. However, it requires additional scientific study and can be a prospect for further research.

The confirmation for the mentioned fact was gained in the course of comparing the indicators among the students of different gender groups and forms at the beginning and after the end of pedagogical experiment. At the beginning of the experiment, the boys of 11<sup>th</sup> forms showed skills in completing specific technical and tactical elements prevailing significantly over the representatives of 10<sup>th</sup> forms. For moves with strikes/ducks it accounted for 7.02% ( $p=0.05$ ), throes bent, tucked – 9.70% ( $p\leq 0.01$ ), turnovers overlapping and turnovers hooked – 7.65% and 6.43% compared to the representatives of 10<sup>th</sup> forms, respectively.

At the same time after the end of pedagogical experiment there was no significant privilege by any of the indicators. The difference accounted for 0.73% to 6.48% on behalf of this or that subgroup of boys ( $p=$  from 0.13 to

0.86).

Contrary to the boys, among the girls of different forms (10<sup>th</sup> and 11<sup>th</sup>) at the beginning of pedagogical experiment the significant discrepancies were recorded only by one group of technical and tactical holds – turnovers hooked. Here the representatives of 11<sup>th</sup> form had privilege by 8.27% ( $p=0.03$ ). After the realization of variable module no significant discrepancies for the experts' evaluations as to completing technical and tactical holds were established. The percentage privilege among the girls of this or that form accounted for 0% to 4.96% ( $p=$  from 0.21 to 0.99).

We would emphasize that the initial level for the representatives of all subgroups of the experimental group was equal, namely it was characterized by lack of experience in doing wrestling. Therefore we can claim that throughout the first weeks of lessons using the means of wrestling became visible more quality at technical and tactical performance of the students of 11<sup>th</sup> form.

However, based on the results of the pedagogical experiment's (variable module's) total duration the indicators among the representatives of 10<sup>th</sup> and 11<sup>th</sup> forms obtained approximately equal values ( $p>0.05$ ). Namely, they reached approximate maximum which it was possible to expect with such organization of educational process.

Further progress (improvement) by the special indicators (competences) is possible, to our opinion, only due to including additional lessons (extracurricular – sport classes' or school forms) or a considerable increase of the amount of specific physical workloads at the existing PE lessons.

This, in turn, can lead to divergence of the vector of physical education from sporting and recreational direction to solely sporting and have an overall negative impact on psychoemotional state of the students (girls and/or boys) and their eagerness towards further lessons.

**Conclusions.** The synthesis of indicators by gender indicated that by most technical and tactical elements girls demonstrate higher indicators. The exception was only when completing turnovers overlapping where boys had better changes. The girls demonstrated higher privilege by the efficiency indicator in specific exercises.

The better integration of the boys' bodies into work in the beginning of a pedagogical experiment and higher

indicators of physical performance making it possible for them to acquire the technique of holds in wrestling more quality already at the start of variable module can be considered the factors of this.

However, the girls not having such preconditions were gradually improving both their physical performance and technique of completing the mentioned specific elements of wrestling. That was what formed the existing slight privilege in the efficiency of the means or wrestling as the end result.

**Prospects for further research** include comparison of indicators among senior schoolchildren studying by the module «Wrestling» and other variable modules.

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