

Improvement of 5-9th Grades Schoolchildren Physical Education in Ukraine by Using Variable Modules Curriculum

NATALIYA SOROKOLIT¹, OLENA SHYYAN¹, MYKOLA LUKJANCHENKO², IRYNA TURCHYK²

¹Lviv State University of Physical Culture

²Drohobych State Pedagogical University named after Ivan Franko, UKRAINE

Published online: October 31, 2017

(Accepted for publication September 30, 2017)

DOI:10.7752/jpes.2017.s4215

Abstract:

Purpose. The objective of this research was an improvement of physical education among schoolchildren of 5th to 9th grades in Ukraine by means of variable modules curriculum. For this purpose, peculiarities of Ukrainian physical education programmes during late XIX – early XX centuries were generalized; 5-9th grades schoolchildren's attitude towards the opportunity to choose curriculum modules were found as well as physical educators willingness to apply the variable part of the curriculum; the condition of introducing variable modules curriculum for 5-9th grades at secondary schools were estimated as well as its effectiveness was tested. **Methods.** Theoretical analysis, generalization of methodological literature and official documents as well as sociological methods (questionnaire of 400 physical educators and 2290 schoolchildren) were used. Data from educational observations and experiments were analyzed by mathematical statistics methods including the calculation of arithmetic means, dispersion, standard deviations and coefficients of variation. Student's t-test was applied to determine statistical significance of the obtained results. **Results.** Physical education of 5-9th grades schoolchildren in Ukraine during late XX – early XXI centuries was conducted according to a common state educational programme which did not anticipate any option to choose modules for different kinds of sport. Since 2009, a new curriculum has been introduced based on variability principle and a number of innovations. Our research has shown that teachers and schoolchildren have positive attitude towards these innovations. The programme allows schoolchildren to develop physical skills more effectively. **Conclusions.** The results of the research have demonstrated that the opportunity to choose from variable modules in the curriculum positively effects physical performance of 5-9th grades schoolchildren.

Key Words: curriculum, variable modules, 5-9th grades schoolchildren, educational experiment.

Introduction

The problem of improving physical education in Ukraine has become especially topical in the recent decade. The state of health among schoolchildren, their level of motor activity, normative and programme, personnel as well as material and technical supplies of school sport facilities are subjects of discussions at numerous theoretical and practical conferences and seminars.

Physical education as an academic discipline in Ukraine is regulated by the state program, which was introduced in secondary schools in 2009. This program is based on variability principle and aims to change the approach in planning physical education lessons as it involves taking into consideration students' interests allowing them to choose among modules representing different kinds of sport. It has been designed according to European experience in developing a curriculum for physical education lessons established at schools in Poland and England (Vilchkovskiy et al., 2008; Sorokolit, 2014). However, there exist different views among scientists and practitioners about the effectiveness of the program. Some authors believe that the implementation of the programme based on variability principle and which provides innovative approach to planning physical education curricular material will improve physical education of schoolchildren (Krutsevych et al., 2009), others argue that the programme contains several shortcomings, namely the lowering educational standards will lead to loss of interest in motor activity. Therefore, the aim of our work was to study the current state of curriculum implementation in practice at schools, to verify experimentally the efficiency of the variable modules approach and to project these results on the former experience of physical education reform in Ukraine since independence in 1991.

Material & methods

The study was conducted at Lviv Regional Institute of Postgraduate Education (LRIPE) and at secondary schools of the Lviv region. A questionnaire of physical educators was conducted at LRIPE. In total 400 teachers who teach the subject at middle school age level (5-9th grades) were questioned. In secondary schools, a total number of 2290 of 5-9th grades schoolchildren were questioned. In addition, an educational

experiment was performed to determine the effectiveness of variable modules application introduced by current curriculum. For this purpose three experimental groups were formed – in secondary school № 50 (EG₁), specialized secondary school №2 (EG₂) and secondary school № 36 (EG₃) in the city of Lviv, where training was carried out according to the current programme. One additional reference group was selected in secondary school № 1 of Chervonohrad (CG), Lviv region, where schoolchildren were trained according to the previous physical education curriculum.

Results

The survey among physical educators of middle school has shown that the vast majority of teachers (93%) believe that physical education lessons in Ukraine should be conducted under a single national programme of physical training. Amount the interviewees, 57% tend to think that the current curriculum will bring positive changes in physical education at schools, while 12% believe that it is not necessary to use the programme, but prefer to rely on their own teaching experience. Distribution of the teaching material is welcomed by 76% of sports teachers. Half of interviewees (51%) always follow instructions and methodological recommendations of the Ministry of education and implement a training program, 47% do this sometimes. We have identified the causes that prevent compliance the recommendations, namely: only 14% of educators state that there is a fully adequate methodological support in schools, while most of them (72%) emphasize that such support for the current programme implementation is satisfactory and there is still a lot missing. In addition there is a number of other factors that prevent qualitative introduction of variable component of the curriculum: lack of sports equipment (77%); lack of gyms at schools (38%); shortage of class hours for physical education per week (18%); busy gym schedule (11,1%).

Opinions of sports teachers are slightly different from those of children of secondary school age. Thus, for 5 – 8th grades schoolchildren the most important reason, which prevents effective introduction of variable modules, is insufficient number of lessons per week. This opinion is shared by 28,4% of schoolchildren at 5th grades; 25,7% - at 6th grades; 21,9% - at 7 grades; 21,3% - at 8th grades. Only 9th grades schoolchildren state that the most important reason for not introducing variable modules effectively is the lack of proper conditions (20,9%). According to 5 - 8th grades schoolchildren, lack of proper conditions as well as sports equipment also play an important role in variable modules introduction. We have ascertained that among 5th grades children 20 – 23,9% think so; at 6th grades - between 9,5 and 13% of schoolchildren; at 7th grades - 16 – 18,8%; at 8th grades – 20,6 – 21,1%. Both physical educators and schoolchildren consider busy schedule of gyms as one of the obstacles for variable modules curriculum implementation (8,9% of 5th grades schoolchildren; 8,3% - at 6th grades; 6,1% - at 7th grades; 9,7% - at 8th grades; 10,1% - at 9th grades).

While choosing a kind of sports, teachers ask children's opinion: 29% of physical educators do so by written questionnaires as recommended by methodological guidelines, although 47% use oral poll. In favour of choosing kinds of sport to master at physical education lessons voted 34,6% of 5th grades pupils; 30,2% - at 6th grades; 28,2% - at 7th grades; 21,7% - at 8th grades; 27,8% - at 9th grades. It was found out that more than one third of asked schoolchildren expressed interest in mastering certain kinds of sport: 32,3% at 5th grades; 36,6% - at sixth grades; 29,9% - at 7th grades; 33,3% - at 8th grades and 37,1% - at 9th grades choose interesting kinds of sport through oral questioning. Divergence between teachers' and schoolchildren's opinions are within statistical error.

Physical educators believe that the optimal number of variable modules that students must master at 5 – 8th grades is five (53% of those asked - for 5th grades, 59% - for 6th grades; 57% - for 7th grades; 42% - for 8th grades). Only for 9th grades children educators support the idea of introducing 4 kinds of sport - 51% of respondents. Also, 75% of educators believe that for children of middle school age physical education load should be 3 lessons per week. Though according to the results of the survey among schoolchildren three lessons per week is not enough. Pupils of 5 – 9th grades believe that physical education lessons on the daily basis are the best at middle school age. This was expressed by 51,4% of those asked at 5th grades; 51,3% - at 6th grades; 44,4% - at 7th grades; 39,3% - at 8th grades and 43.7% at 9th grades.

Generalized results of the teachers' questionnaire have shown that the most effective form of the current curriculum features explanation is scientific and methodical seminars, conferences and methodical associations of teachers - 65% of respondents have claimed so. Special significance in explaining the curriculum has been given to so-called advanced training course by 54% of those asked. Their willingness to develop a special course entitled "Analysis of physical education curriculum" during the course have confirmed 86% of the teachers, though most of them believe that they have sufficient level of qualification to implement the curriculum (68%), while 13% believe that they have a high level and 17% - a satisfactory one. This has prompted us to develop and implement a special course entitled "Analysis of physical education curriculum" [2].

Among the variable modules of the curriculum the following ones are being actively implemented in Lviv region: volleyball, basketball, athletics, football, gymnastics, table tennis for 5–6th grades schoolchildren; volleyball, basketball, football, athletics and gymnastics classes for 7th grades schoolchildren; volleyball, basketball, football, athletics for 8-9th grades schoolchildren that correspond to the material supplies of schools. The real state of the curriculum variable component implementation is significantly different from the interests of schoolchildren. It has been found out that children seek to master: swimming - 65%, volleyball - 61%, football

– 58,7% basketball – 56,7%, table tennis - 55%, badminton – 50,5 % at 5th grade; at 6th grade they would prefer: swimming - 62,5%, volleyball – 56,1%, table tennis – 55,7% basketball – 54,2%, football - 54%, athletics – 44,9%; at 7th grade: swimming – 52,8%, volleyball – 50,3%, football and basketball – 49,3%, table tennis – 50,3%; at 8th grade: swimming – 63,6%, volleyball – 53,9%, table tennis – 52,4% and basketball – 50,1%; at 9th grade: swimming - 60,9%, volleyball – 48,4%, table tennis – 45,5%, football – 44% [7]. As an example, the results of our research among 5th grades schoolchildren are presented below (Table 1).

Table 1. Variable Modules Curriculum Implementation, Material and Technical Supplies at Schools and Schoolchildren's' Interest to Master Kinds of Sport (5th Grades).

Variable Module	State of Implementation (%)	Material and Technical Supplies(%)	Interest in Variable Module (%)
Volleyball	93,1	89,2	61,0
Basketball	90,8	90,8	56,7
Athletics	85,3	75,9	46,6
Football	77,1	76,8	58,7
Gymnastics	72,9	53,7	45,2
Table Tennis	42,2	51,3	55,0
Swimming	24,8	24,1	65,8
Badminton	15,6	25,5	50,5
Handball	12,6	18,1	29,4
Skiing Training	11,7	10,6	37,4
Tourism	10,1	8,3	38,1
Aerobics	4,4	12,4	25,5
Kettle bell Lifting	2,5	5,0	20,0
Applied Professional Physical Training (APPT)	1,6	2,5	10,3
Aqua fitness	0,9	3,4	26,8
Gorodki	0,0	0,5	14,4

The results of the survey among the educators and schoolchildren at secondary schools prompted us to conduct an educational experiment. The task was to prove experimentally the efficiency of variable modules curriculum and to conduct comparative analysis of schoolchildren's physical fitness development according to the current programme (those children were in experimental groups) and previous one (those children were in the comparison group). We carried out a non-system scientific research. Three educational institutions, where training was conducted according to the current curriculum, were selected by simple random sample, and one school was chosen, where training was conducted according to the previous curriculum. The conducted educational experiment has proved that the current curriculum that is based on the principle of variability and provides students with the choice of variable modules (that is kinds of sports) is more effective than the previous one. This is evidenced by the increase of average physical qualities such as speed, flexibility, strength, endurance as well as force-velocity qualities.

Among children of all experimental groups, growth indicators of physical qualities were higher than among those in the reference group.

The most rational choice of variable modules was made in EG₂. There, students were mastering athletics, football, gymnastics, basketball and handball.

Among schoolchildren of EG₂ average speed index has increased: by $0,5 \pm 0,085$ sec at 5th grade; by $0,29 \pm 0,06$ sec at 6th grade; by $0,25 \pm 0,05$ s at 7th grade; by $0,22 \pm 0,075$ sec at 8th grade and by $0,27 \pm 0,65$ sec at 9th grade at running 30 m. The same tendency was observed at doing the exercise of lifting the body to sedentary position within 30 seconds. Systematic credible speed changes in abdominal muscles contraction has been observed among schoolchildren of EG₂: average speed indices have improved $5,56 \pm 1,21$ times as much at 5th grade; at 6th grade - $62,16 \pm 0,57$ times as much; at 7th grade - $1,63 \pm 0,69$ times as much; $3 \pm 0,60$ times as much at 8th grade and $1,7 \pm 0,85$ times as much at 9th grade.

In EG₃ reliable speed changes have been observed among schoolchildren of 5th grade (it has improved by $0,14 \pm 0,075$ sec), of 6th grade (by $0,16 \pm 0,09$ sec) and of 9th grade (by $0,29 \pm 0,11$ sec) at running 30 m and among schoolchildren of 7–9th grades at lifting the body to sedentary position within 30 seconds (at 7th grade - $2,93 \pm 1,03$ times as much, at 8th grade – $2,06 \pm 0,72$ times as much; at 9th grade - $2,33 \pm 0,83$ times as much). In EG₁ at running 30 m significant changes have occurred only among schoolchildren of 5th grade ($0,1 \pm 0,75$ sec) but no significant changes of speed have occurred at lifting the body to sedentary position within 30 seconds. In our opinion this situation is due to the fact that variable module of gymnastics was not implemented in EG₁. Thus, we have established a direct correlation between the implementation of variable module of

gymnastics and speed development of abdominal muscles. However, reliable speed changes at lifting the body to sedentary position within 30 seconds have been observed only among 8th grade schoolchildren in the comparison group (average indices have improved $2,27 \pm 1,12$ times as much), at running short distances - at 6th grade (the increment is $0,18 \pm 0,75$ sec) and at 7th grade (running indices have improved by $0,17 \pm 0,075$ sec). It should be noted that gymnastics was studied in the comparison group. On basis of this we may state that the content of variable modules of gymnastics and athletics in the current curriculum has better effect on the development of speed as compared to the previous one.

In EG₂ significant changes in velocity and power indices at standing long jump and throwing the ball have been observed among 5-9 grades schoolchildren. When performing standing long jump the average indices increment is: $9,5 \pm 3,09$ cm at 5th grade, $9,16 \pm 3,22$ cm at 6th grade, $10,17 \pm 4,09$ cm at 7th grade, $8 \pm 5,24$ cm at 8th grade, $11,1 \pm 5,78$ cm at 9th grade. While throwing the ball the average indices have improved: at $4,67 \pm 1,29$ m at 5th grade; at $2,7 \pm 1,83$ m at 6th grade; at $2,37 \pm 1,94$ m at 7th grade, at $2,43 \pm 2,37$ m at 8th grade and at $5,13 \pm 3,07$ m at 9th grade. Among schoolchildren of EG₃ significant positive changes in velocity and power indices have been found at 5-6th and 8-9th grades, namely: $7 \pm 2,96$ cm at 5th grade; $7,24 \pm 3,11$ cm at 6th grade; $8 \pm 5,67$ cm at 8th grade; $9,83 \pm 6,73$ cm at 9th grade, while 7th grades children have demonstrated no significant changes. While throwing the ball the following increments have been estimated among 5th, 6th, 7th and 9th grades schoolchildren: at 5th grade - $2,16 \pm 1,3$ m; at 6th grade - $1,87 \pm 1,89$ m; at 7th grade - $1,94 \pm 1,87$ m and at 9th grade $2,87 \pm 2,96$ m, while 8th grades children have demonstrated no significant changes.

Among the schoolchildren of EG₁ significant changes in velocity and speed indices at throwing the ball have been observed only at 6th grades (average increment - $1,87 \pm 2,05$ m); at 7th grade ($1,9 \pm 2,26$ m), while at performing standing long jump significant changes have not been found at any grade. It should be noted that among schoolchildren of the comparison group significant changes have occurred only at 7th grade at standing long jump and at 7-9 grades at throwing the ball.

Systematic significant changes of endurance development have occurred among schoolchildren of EG₂: at 5-7th grades (after the experiment children at 5th grade were able to overcome the distance longer by $516 \pm 59,57$ m, at 6th grade - by $96,67 \pm 40,56$ m; at 7th grade the distance of 1000 m (for girls) and 1500 m (for boys) was ran faster by $0.14,90 \pm 0.05,25$ min, sec and at 9th grade the distance of 1500 m was ran at $0.25,98 \pm 0.09,94$ min, sec faster. Only among 8th grade schoolchildren of the experimental group no significant improvement in results has been observed. It should be noted that among EG₁ schoolchildren significant changes have occurred only at 6th grade (the increment is $163 \pm 98,05$ m) and at 8th grade (ability to run the distance faster by $0.53,14 \pm 0.21,39$ min, sec). However, no significant change has been observed among schoolchildren of EG₃ and the comparison group of any grade.

Similar tendency has been indicated with strength development - significant systematic changes have occurred among 5-9th grades schoolchildren of EG₂ (strength development increase at lying support biceps curl exercise: at 5th grade - $8,7 \pm 1,13$ times as much, at 6th grade - $2,63 \pm 0,93$ times as much, at 7th grade - $2,8 \pm 0,95$ times as much, at 8th grade - $2,84 \pm 1,35$ times as much, at 9th grade - $5,44 \pm 3,52$ times as much). Instead, EG₁ and EG₃ schoolchildren have demonstrated significant changes in some grades. Thus significant increase in strength parameters among EG₁ schoolchildren has been determined at 5-6th grades (at 5th grade - $2,5 \pm 2,17$ times as much, at 6th grade - $2,3 \pm 2,57$ times as much) and at 8th grade - $2,59 \pm 2,06$ times as much), and among 7th and 9th grades schoolchildren no significant change has been observed.

In the third experimental group there have not been detected any significant changes among 5-6th grades schoolchildren, while among 7-9th grades schoolchildren credible changes have been observed (at 7th grade the results have improved $2,57 \pm 2,07$ times as much, at 8th grade - $2,67 \pm 0,99$ times as much, at 9th grade - $2,46 \pm 1,11$ times as much).

In the comparison group, in which lessons were conducted according to the previous curriculum, reliable changes of average power indices have been indicated only at 7th grade ($2,5 \pm 1,31$ times as much) and at 9th grade ($2,57 \pm 1,64$ times as much), while at 5-6th and 8th grades no significant changes have been found.

Credible systematic changes of average flexibility indices have occurred among schoolchildren of all experimental groups. The largest increase of flexibility indicators have been found in the third experimental group (at 5th grade - by $1,57 \pm 1,38$ cm, at 6th grade - by $1,7 \pm 1,07$ cm, at 7th grade - by $1,33 \pm 1,26$ cm, at 9th grade - by $2,3 \pm 1,74$ cm). Only among children at 8th grade significant changes have been found. While at the same time among other two experimental groups significant changes have occurred only in three age groups: in EG₁ such changes have occurred among 5-6th grades children (at 5th grade flexibility increase is $1,47 \pm 0,95$ cm, at 6th grade - $1,37 \pm 0,81$ cm); in EG₂ - among 6th, 8th grades children (at 6th grade - $1,16 \pm 0,71$ cm, at 8th grade - $2,57 \pm 1,04$ cm). In the comparison group significant changes in flexibility indices have been observed only at 7th grade. The results have improved by $1,3 \pm 1,02$ cm, which proves the effectiveness of the current programme, particularly that of the variable module of gymnastics.

Discussion

Analysis of scientific, methodological literature as well as official documents has shown that during Ukraine's independence (late XX-early XXI century) both state and regional training programs were implemented in secondary schools. Most of them were different neither in content nor in training structure of

the curriculum. They consisted of an explanatory note with a grid of hours for learning material acquisition offered by the ministry, the content of teaching material, requirements for physical skills development, homework, reference standards and tests for physical fitness assessment [3].

It has been ascertained that training programmes of late XX-early XXI century were different both in purpose and objectives. Researchers combine physical education curricula of the late twentieth century into several groups according to their main aim, namely recreational, educational, training and sport. However, the content of their teaching material is almost identical. [3].

It should be noted that at the beginning of the XXI century a number of reforms in physical education were carried out. Both objective and subjective reasons have emerged for such reforms in the system of physical education in schools to be effected. Among the objective circumstances we would highlight: the transition from a 12-year education system to an 11-year one; critical situation with younger generation state of health; number of deaths at physical education lessons during 2008-2009 school year; shortcomings of traditional educational system that did not take into consideration the interests and inclinations of children; need for change in approaches to physical education at schools; taking into account the best of European experience. Subjective factors include: the authoritarian attitude of a teacher as a commander who develops educational process according to government recommendations, regardless of schoolchildren's needs, interests, values and experience; lack of interest in the subject among schoolchildren; process of teaching focused only on accomplishing tasks rather than on display of creativity; drawbacks in evaluation system – during assessment one pupil's results are compared with those of the others regardless of personal progress and effort; schoolchildren do not have sufficient freedom in educational process [4].

However, the reform of physical education is not unique only to physical education in secondary education of Ukraine but also in European countries. It has been ascertained that the process of physical education reform is typical for most EU countries. Its beginning fell on the end of the twentieth century. Reasons for reformation abroad were similar in nature to those in our country. That is discrepancy between school education content and current requirements of society; lack of unity between the content of education and needs, interests and desires of young people; pedagogical conservatism of large part of teachers as their training was oriented mostly on memorization the programme material and did not create proper conditions for schoolchildren's activity, their creativity and independence; ineffective individual approach to schoolchildren; dominance of boredom and fear at schools, causing low emotional state among schoolchildren, authoritarianism of school administrators and aggression among children [1, 5, 6].

One of stages of physical education reform in Ukraine was to develop and implement a conceptually new curriculum of physical education [7]. The one that includes a number of innovations in comparison with the previous ones. Basic principle is the one of variability, which implies a choice of kinds of sports for mastering in each grade. The curriculum is presented in two parts: invariant and variable. The invariant component is mandatory for studying in each grade, which includes theoretical and methodological knowledge and general physical fitness that are not subject of selection as an independent teaching material and are studied during each lesson. The variable component consists of variable modules that schoolchildren together with teachers have the right to choose in each grade according to material and technical supplies, educational institution traditions, personnel capacity and willingness of schoolchildren. Every kind of sport can be represented as a variable module of the curriculum. Schoolchildren choose the kind of sport by means of written questionnaire. Current programme possesses a new approach in the assessment of schoolchildren's progress, which encourages them, namely by means of a special accumulation system called "bonus points". While assessment teachers should take into consideration children's personal achievement dynamics during the year while training for passing educational standards; schoolchildren's degree of activity during the lesson; schoolchildren's involvement in physical education and sport in their free time; schoolchildren's performance efficiency at sport events at school, district (city), regional or national level. These criteria allow teachers to improve marks for 1-2 points [8, 9].

The abovementioned curriculum innovations and approaches in physical education prompted us to conduct a survey among the participants of educational process (teachers and schoolchildren) regarding:

- curriculum innovations and approaches change in physical education lesson conducting;
- curriculum variable modules choice at secondary schools;
- problems while implementing the variable component of the curriculum;
- correlation between implemented variable modules of the curriculum and material as well as technical supplies at schools and schoolchildren's interests.

Emphasize the new and important aspects of the study and conclusions derived from the study.

Conclusions

We have discovered that physical education in Ukraine during the Soviet period and until 2009 was carried out by training programmes that did not take into account the interests of students and did not include the choice of sports to master. At present systematic reforms have been conducted in physical education, namely the curriculum has been introduced that allows schoolchildren to participate in educational material planning, particularly to choose with teachers kinds of sport that are interesting for pupils. Physical educators have positive attitude towards innovations in the curriculum based on the principle of variability. However, certain problems

have occurred with the implementation of this program due to insufficient level of school supply with equipment and inventory; heavy workload of gyms; educators conservatism.

At educational process variable modules have been implemented that reflect the existing material and technical supplies of schools in practice: volleyball, basketball, football, track and field, gymnastics. Though, schoolchildren would like to master swimming, table tennis and badminton as well. However, appropriate conditions for mastering these kinds of sports have not been created at a considerable number of Ukrainian schools.

The content of the current curriculum influences effectively the development of physical qualities as compared to the previous curriculum.

Conflicts of interest - The authors declare no conflict of interest.

References:

1. Vilchkovskiy, E., Pasichnyk, V. (2008). Self-assessment of professional training by graduates of physical education universities and higher educational establishments of Ukraine and Poland. *Pedagog Psychol Med Biol Probl Phys Train Sport*, **8**, pp. 27-34.
2. Sorokolit, N. (2014). Physical educators attitude towards current curriculum. In: Prystupa Ye. N. (ed.) *Young Sports Science of Ukraine: Coll. sciences. Prospect. branch of nat. education, sports and health. Proceedings of the XVIIIth International Conference "Young Sports Science of Ukraine"*. Lviv State University of Physical Culture, Lviv, pp. 150-156.
3. Bakiko, I. (2007). Combination of base and variable parts of schoolchildren physical education curriculum. Doctoral Thesis of a Candidate of Sciences in Phys. Education and Sports: 24.00.02 / Bakiko I.; Lesia Ukrayinka Volyn State University, Lutsk, p. 202.
4. Moyiseiev, S. (2011). Professional skills of a physical educator in terms of professional competitions [in Ukrainian]. *Physical education at school [ukr. - Фізичне виховання у школі]*, **6**, pp. 31-35.
5. Pasichnyk, V. (2009). Key tendencies of physical education at Polish schools nowadays. In: Prystupa Ye. N. (ed.) *Young Sports Science of Ukraine: Coll. sciences. Prospect. branch of nat. education, sports and health. Proceedings of the XIIIth International Conference "Young Sports Science of Ukraine"*. Lviv State University of Physical Culture, Lviv 2009, pp. 122-126.
6. Turchyk, I., Kozibroda, L., Berezhanskyi, V. (2010). Targets of physical education curriculums in Europe [in Ukrainian]. *Scientific and pedagogic problems of physical culture (Physical culture and sport) [ukr. - Науково-педагогічні проблеми фізичної культури (фізична культура і спорт)]*, **8**, pp. 213-217.
7. Shyyan, O., Kravchenko, N. (2012). Problems of the variable component of the curriculum implementation [in Ukrainian]. *Pedagogics, physiology, medical-biological problems of physical training and sports [ukr. - Педагогіка, психологія та медико-біологічні проблеми фізичного виховання і спорту]*, **9**, pp. 104-107.
8. Kravchenko, N. (2012). Current curriculum as a part of optimal motor activity among pupils of middle school age. In: Prystupa Ye. N. (ed.) *Young Sports Science of Ukraine: Coll. sciences. Prospect. branch of nat. education, sports and health. Proceedings of the XVIth International Conference "Young Sports Science of Ukraine"*. Lviv State University of Physical Culture, Lviv 2012, pp. 108-112.
9. Krutsevych, T., Diatlenko, S., Turchyk, I., Kravchenko, N., Chesheiko, S., Lakiza, O. (2009). Curriculum for secondary schools. Physical education at 5-9th grades [in Ukrainian]. *Physical training at school [ukr. - Фізичне виховання у школі]*, **4**, pp. 10-15.
10. Sorokolit, N., Shyyan, O. (2014). Research of curriculum variable modules implementation at 6th grades compliance with the material base of institutions and interests of schoolchildren. In: *Proceedings of the X International Scientific Practical Conference «Achievements of Modern Science – 2014»*, Prague, pp. 20-26.