

УДК 371.72:616–036.88

**PRELIMINARY ANALYSIS
OF REASONS OF LETHAL CASES
DURING PHYSICAL EDUCATION LESSONS****Yevhen PRYSTUPA, Andriy VOVKANYCH,
Yuriy PETRYSHYN***Lviv State University of Physical Culture, Lviv,
Ukraine, e-mail: avovkinfiz@i.ua***ПЕРВИННИЙ АНАЛІЗ ПРИЧИН ЛЕТАЛЬНИХ ВИПАДКІВ ПІД ЧАС УРОКІВ ФІЗИЧНОГО
ВИХОВАННЯ.** Євген ПРИСТУПА, Андрій ВОВКАНИЧ, Юрій ПЕТРИШИН. *Львівський державний
університет фізичної культури, м. Львів, Україна, e-mail: avovkinfiz@i.ua*

Анотація. У статті розглянуто проблему летальних випадків у загальноосвітніх середніх навчальних закладах України під час уроків фізичної культури та зроблено спробу встановити їх причини. На підставі аналізу літературних джерел доведено необґрунтованість тверджень щодо можливого негативного впливу занять фізичною активністю на здоров'я школярів; встановлено, що проблема летальних випадків на уроках фізичної культури є явищем, яке трапляється у різних країнах світу; визначено фактори, які спричиняють суттєвий негативний вплив на стан здоров'я молоді шкільного віку. Подано пропозиції щодо можливого поліпшення функціонального стану школярів шляхом підвищення ефективності занять фізичною активністю.

Ключові слова: школярі, урок фізичної культури, летальні випадки, стан здоров'я.

Statement of the problem. The discussion of accidents, particularly the lethal ones, during or shortly after physical education lessons has recently become very popular among the Ukrainian sports scientists, physical educators and the society in general. Due to the mainly negative coverage of the events by mass media, the notion of harmful and dangerous lessons of physical education at school and the inefficient specialists working there, has been gradually formed in the public opinion. Government officials, being pressured by the public opinion, have made some unconsidered and populist decisions, resulting in worsening the problem rather than solving it.

We are going to analyse some aspects of the accident in physical education on the basis of modern school theory and practice, the tendencies of modern society development and the real status of a modern student, pursuing thus to encourage a further discussion for making the considered and effective recommendations, contributing to the development of physical education in a secondary school.

The aim of the article is to analyse the lethal accident at physical education lessons and substantiate the means and methods of its prevention.

The methods of research: statistic analysis of the data from bulletins and internet-resources of the World Health Organization, national ministries and departments of public health, education and science of Ukraine, Russia, the USA, the European Union, and other state and public organizations, as well as from scientific published works concerning the problems of demography, physical activity, level of health and quality of life.

Results and discussion. First of all, is physical education lesson fully responsible for the problem, or, in a broad sense, may physical activity have a negative influence on the human health?

One of postulates in the ancient Roman law was the saying “Post hoc non est propter hoc” (“After this is not because of this”). At all times lethal cases has been common among sportsmen during sports competitions or trainings – since the marathon legend of the ancient Greece to nowadays, when every year, according to regrettable statistics, there is one or two, unpredicted at first sight, lethal cases out of 200 thousand sportsmen. However, death of the ancient Greek marathon runner was not caused by running 42-kilometer distance (being so, marathons would be banned as dangerous for human health), the runner died for the reason his body had not been recovered from

the wound in a battle. It is the ancient Greece, where another famous saying originated: “Want to be strong – go running, want to be beautiful – go running, want to be clever – go running”, which is of urgent importance nowadays, when major part of the Earth population is hypo dynamic. This, due to the terminology accepted in the modern world, may be interpreted as follows: physical activity (when planned correctly) is an essential prerequisite for high quality of human life.

According to scientific data, one person out of 7620 middle-aged jogging runners dies every year. The results of epidemiologic researches confirm, though, that men leading a sedentary lifestyle are at higher risk for coronary heart disease than physically active people of the same age (25). Sedentary lifestyle doubles the risk of cardiovascular diseases with lethal cases as well (6). At the same breath, specialists of the American Heart Association emphasize that, despite slightly increased risk of lethal accident during highly intense physical loading, final adaptation of the body to such loadings contributes considerably to a decreased risk of cardiovascular diseases.

Adequate physical activity, due to the data of the World Health Organization, is one of the main factors providing the mental and physical well-being (meaning *health*) of a person. Particularly, physical activity decreases the risk of ischemia, diabetes and obesity by 50%, hypertension – by 30%, and increases a human lifetime by 2–4 years (9, 16).

Thus, physical activity that is adequate to a person’s abilities cannot damage human health in any way, in the contrary – it is one of the most important factors in restoring and strengthening the human health. Hence, it is not a physical education lesson, with its main component of specially organized physical activity, which causes a number of lethal cases among schoolchildren; the problem is, in all the probability, the improperly defined and realized quantity of physical loading inadequate to a child’s adaptation abilities. The conclusion is not novel – physical activity at a physical education lesson is *the irreplaceable, the best and the most effective* factor in a child’s health improvement, if it corresponds to the psychophysical characteristics of a child. Even small (but regular and systematic) physical activity at physical education lessons is *the most accessible, the cheapest and the most optimum* factor in strengthening a child’s health.

Secondly, are the lethal cases at physical education classes a Ukrainian problem only? Is it a solely “Ukrainian phenomenon”, caused by education system problems on one hand (inappropriate educational programmes and standards, poor material basis, low scientific and pedagogical level of a modern physical educator), and by public health system drawbacks on the other hand (schools shortage of the first aid stations, poor level of preventive medicine, lack of medical supervision and regular monitoring of the schoolchildren’s health state), or is there a number of some other social, economic, psychological, and ecological reasons?

Due to the accessible material in the internet-resources, the lethal cases at physical education lessons are not the exceptions even in the USA, economically developed countries of the European Union, or Russia (1, 2, 25). In the USA, for instance, at least 8 schoolchildren lethal cases at physical education classes were registered during 2010. In Poland four lethal accidents while physical exercising among schoolchildren of different age have been registered in 2009. According to Russian Ministry of Health reports 12 lethal accidents on average at PT classes are being registered every year. Similar accidents have occurred in schools in France, Great Britain, Germany, over the last couple of years.

It should be noted that almost 85% of all children lethal accidents have happened in the first part of school year term and the majority – during the first months. That can be a proof of the fact that after long summer vacations schoolchildren are deadaptated, unable to endure general school educational as well as physical loadings.

Another important aspect to take into consideration is that the primary reason of schoolchildren deaths during physical trainings is cardio-vascular diseases, among which hypertrophic cardiomyopathy, aortic aneurysm and myocarditis are prevailing (not out of place would be to mention that cardio-vascular diseases are the main reasons of deaths in developed countries – ex., 2 out of 5 people in the USA die because of heart disease) (15). As specialists emphasize, sudden death often occurs as a result of present, but not diagnosed, disease, or because of underestimation

of organism functional inappropriateness to actual physical loadings. The next place is because of considerable intense loadings at disease state. In some cases sudden death may occur because of exercising despite doctor's prohibition.

One of the significant reasons for the accidents mentioned above are age peculiarities of psycho- and physiological development of schoolchildren – all the lethal accidents under question have occurred among children of 11–18 (average age is 14 and only one child was only 10 years old). At the same time it has been scientifically proved that peculiarities of psycho- and physiological development of schoolchildren (or “teenagers” as schoolchildren are being called in the West) during so-called “phase” is the most sensitive to different endo- and exogenous irritants. Therefore it is extremely important for the teacher to plan and realize educational elements accordingly, especially when it concerns psycho- and physical loadings.

Hereby accident with lethal outcome during PT classes are not only Ukrainian phenomenon, they are inherent to all civilized societies where social system of physical training is being realized in educational system.

Thirdly, if, according to the listed facts, physical activity (PT class) provided it is appropriately balanced cannot be the reason of lethal outcome, then what is the reason for such accidents in Ukraine? What reasons do establish such situation in the sphere of younger generation health formation in our country? As we know human state of health at childhood defines its dynamics during person's whole lifetime and to a great extent that of next generations too.

On the whole Ukrainians state of health is on the edge of catastrophe and real indices of lifetime expectancy (LTE) and healthy lifetime expectancy as well as DALY index (that characterizes lost years of healthy life are indicative.

Life time expectancy (LTE) dynamics index and absolute morbidity index of population in Ukraine over the last 20 years have proved the existence of serious problems in the sphere of public health services: in 1990 LE was 70.5 years, then in 1995 LE was significantly lower – 66.8 years, and in the next 15 years, despite slight growth tendency (2003–67.8, 2009–68.25 years), LTE index has not reached its initial value (table 1).

Simultaneously similar indices for developed European countries of Group A (Iceland, Italy, Switzerland, Sweden, etc.) in 2009 has shown more than 80 years (21). According to Institute of Demography and Social Research of Ukrainian National Academy of Science prognosis anticipated life duration, if born before 2050, will increase till 71.5 years for men and 79.5 years old for women that is significantly lower than the indices in developed countries (8).

The difference between the countries with the highest and the lowest indices of life expectancy (LE) in Europe designates more than 15 years. In most of developed countries in Europe average life expectancy (LE) among women is now exceeding 80 years old, among men – 75 years old, while life expectancy (LE) among Ukrainian women is limited within 74,5 years old, and Ukrainian men – 62 years old.

What concerns healthy life expectancy then, unfortunately, Ukrainians (54.9 years old) are in the end of the list together with the Turkmen (51.6 years old), the Tadzhiks (53,1 years old), losing even to the Uzbeks (57,9 years old) and The Northern Koreans.

According to the data provided by Ukrainian Academy of Medical Sciences the sickness rate of schoolchildren during last 10 years has grown up to 27%. If in the first form there are more than 30% of children suffering from chronic diseases in the 5-th form they grow in number up to 50%, and in the 9-th form they reach 64%. All in all only 7% of Ukrainian schoolchildren have satisfactory functional state of organism. In the 1-st form 11% of schoolchildren have deviations in locomotor system, 25% in nasopharynx, 30% in nervous system, 30% maldigestion, 25% suffer from allergy. Ranging from 1-st till 9-th form visual acuity decreases up to 1,5 times (the so called disease of overachiever), incorrect posture rate grows in 1,5 times, maldigestion increases in 1,4 times, vegetoendocrinic system diseases grow in 2,6 times. In whole nearly 41% of schoolchildren have dissatisfactory adaptive potential (5). So, out of 5,5 Ukrainian schoolchildren, 2,25 mln (41%) of them can join the ranks of sick. According to the data provided by Institute of

Table 1

Absolute value dynamics of morbidity among population of Ukraine

Year	Number of illness cases registered for the first time, thousands.									
	Total	Neoplasm	Nervous disease ¹	Blood circulation disease	Respiration disease	Skin disease	Mascular-skeletal disease	Urinary disease	Congenital anomaly	Traumas, poisoning, etc.
1990	32188	310	2640	1149	17021	1799	1374	1224	41	2866
1991	...	...	...	...	...	...	...	...	...	...
1992	33214	333	3005	1412	16226	1999	1529	1459	52	3018
1993	33833	332	3045	1412	16671	2037	1543	1519	54	2878
1994	31455	328	3024	1401	14499	2135	1439	1489	49	2704
1995	32547	327	3037	1390	15705	2144	1416	1544	47	2647
1996	30169	335	3067	1412	13221	2090	1431	1623	50	2603
1997	31158	348	3104	1497	14129	2051	1476	1711	53	2484
1998	31974	372	3331	1690	13877	2122	1600	1881	59	2465
1999	32959	382	767	1950	14485	2037	1548	1886	61	2401
2000	33471	382	748	2338	14639	1996	1571	1939	62	2339
2001	33192	394	745	2384	14213	2008	1593	2049	59	2239
2002	32233	382	748	2370	13372	1950	1598	2039	57	2244
2003	32585	395	751	2386	13835	1915	1572	2077	54	2297
2004	32573	406	755	2498	13511	1917	1609	2153	55	2245
2005	32912	408	754	2430	13894	1936	1600	2185	53	2264
2006	32240	414	764	2431	13308	1906	1597	2172	53	2289
2007	32807	407	752	2437	13946	1952	1569	2132	51	2284
2008	32467	406	753	2478	13671	1911	1567	2136	51	2263
2009	33032	407	754	2423	14528	1890	1544	2140	52	2164
2010	33080	418	750	2390	14595	1921	1532	2138	52	2217

pediatrics, obstetrics and gynecology of Ukrainian Academy of Medical Sciences, only from 6% to 10% of teenagers aged 12–18 are considered healthy. In 50% of boys and 65% of girls the adaptation capacity reserves are lower than average (10).

According to the data provided by World Health Organization, the main cause of death in European countries is noninfectious diseases that result in more than 85% of fatal outcomes. In its turn the basic diseases are due to the insufficient (not excess) physical activity, unhealthy diet, smoking, alcohol abuse, drug addiction, overweight problems, unsafe sex, high blood pressure, high cholesterol rate (12) (Fig.1).

Due to the recent researches concerning the physical activity rate of Ukrainian schoolchild, not more than 5–10% out of their number perform minimum age norm of physical activity of developing nature, and physical activity in girls is in 2–4 times lower than in boys. Essential reason for poor health among schoolchildren is the reduction of physical activity with age (3).

The burning issues concern the healthy diet of schoolchildren, as poor quality aliment fails to provide the organism of a youngster with necessary elements and affects his ability to perform physical loadings, as well as rapidity and completeness of renewal processes in organism after their completion. According to the parliamentary hearings “Youth and healthy lifestyle”, 27% of our population (including schoolchildren) lack money for proper nutrition. Many school canteens offer poor selection of food, with insufficient caloric value, and don't respond to sanitary demands of cooking.

The problem of overweight and obesity is growing rapidly among the young Ukrainians, the main reasons for which are fast foods, insufficient physical activity level and sedentary lifestyle. It should be pointed out, that not only Ukrainians face this kind of problem. Thus in China during last 20 years the number of overweight young people has grown in 4 times, and in European Union from 25% to 50% of young people are overweight (17, 20, 21).

In Ukraine 45% of boys and 35% of girls smoke, 68% of boys and 64% of girls drink alcohol, 13% of young people take soft drugs. Due to recent data provided by the WHO, Ukrainian schoolchildren are “champions” in drinking alcohol – 40% of Ukrainian schoolchildren drink alcohol at least once a month (Israeli schoolchildren, lagging far behind, take the second place – 28%) (14, 18, 22).

The important issue in child's health is day routine. The amount, intensity, information loading of studying process of Ukrainian schoolchildren is far beyond the limits. For instance, the workweek of senior pupils is over 50–53 hours (whereas the workweek of an adult is not more than 40–41 hours). It should be pointed out, that a child spends most of this time at school, sitting at uncomfortable desks, having poor illumination and even worse perfilation. Alongside computerization and as a result of it the explosion of information flow, that a pupil has to learn, competitive testing, additional tuition, that is on regular basis nowadays, all these factors contribute to the fact that the atmosphere in modern comprehensive schools is not only stressful but distressful. It means that contemporary psychological and emotional load parameters per person are beyond any possible limits. The situation is especially critical in new types of schools, where more than a half of gymnasium students by the end of the school day have the signs of psychoemotional and somatic exhaustion. The important fact is that amount of sleep for child should be no less than 9,5–10 hours, in average it doesn't extend 7–8 hours, that doesn't contribute to the recreation of organism after psychoemotional and physical load.

According to the well-known data, health is kept by leading proper lifestyle (by approximately 50%), genetic code (20%), and ecology factors (20%) and medical treatment (only 10%). At the same time, the lifestyle of the majority of Ukrainians (as well as schoolchildren) is far beyond the rational. Thus, scientists claim that a pupil of the secondary school should walk/run/get through the distance of minimum seven kilometers per 24 hours a day, including minimum of three kilometers during school hours, as well as taking a walk/playing/being out of doors minimum of three hours each day. The estimated data state that today, schoolchildren do not manage to fulfill even the fifth part of the recommended requirements related to the active lifestyle (4). That is why,

it is only the lack but not the excess of vitally important physical activity that causes accidents both at school and outside school (11).

In order to find the optimal way out of this situation, it is very essential to rely on the modern European conceptions of physical evaluation where the health of the schoolchildren (determined by the energetic parameters of body functioning, body build etc.), but not the tests results of physical conditioning, take the paramount role (26). The above mentioned methodology emphasizes the conditions of energetic fitness, blood circulation, and resistance to illnesses as well as psychic conditions. In other words, the modern approach to the evaluation of health-related-fitness among schoolchildren considers both the components of physical conditioning and the physical activity itself as the main factors of general well-being (24).

For further consideration, it is worth overlooking the problem which concerns medical care. There is a clear connection between physical fitness and high-quality medical service at school (in Volyn region there is only one medical station for five schools and in Trans Carpathian region there are only 10 doctors and 228 nurses serving 735 institutions). What is more, the required level of knowledge at physical education establishments should be increased as well as the educational theoretical basis (more than 9% of the physical education teachers do not have proper qualification); the physical activity at the elementary school is done under the control of almost all non-qualified teachers (it is the paradox, because there is not any physical education specialists at school at the right period of the motor skills development when schoolchildren have their body start to build as well as they learn to adopt to the new surroundings; however the schools are provided with the specialists in Music and Christian Ethics Studies). The next essential point for solving the physical education problems relates to the financial support. Moreover, it is necessary to fulfill the programs of extramural activities for schoolchildren (the pedagogy problem for the leisure activity of the schoolchildren is waiting for being researched; this is the problem which is aimed at improving young people's health).

To sum up, the most important issue for society to keep in mind is to be systematically as well as sufficiently involved in physical activity as this is the most effective mean to improve health of young people. There are not any alternatives for physical activity in the whole world. That is why sport, physical culture and health should undertake one of the leading roles at the Ukrainian ideological system.

Conclusions. The reason of many lethal cases (which happen in all countries of the world, regardless social as well as economical development) during physical activity at physical education lessons is an incorrectly determined amount of physical loading. The amount of physical loading should be determined on the basis of some additional factors such as the period of the academic year, the psychological aspects of schoolchildren at their age, the capacity of the schoolchildren to cope with the loading (concerning the resistance to chronic and acute diseases).

The main reasons why there is the lack of opportunity and so little interest in rational physical activity in Ukraine, one should consider the lack of healthy lifestyle promotion, inadequate schoolchildren's working day regime, unhealthy diet (abuse of "fast food" food category), the lack of qualified teachers of physical education (especially at the elementary school), the low level of medical care at school, the lack of financial as well as technical support.

The programs for keeping schoolchildren's somatic as well as psychological health, healthy diet, general as well as working hygiene, physical loading, were confirmed to be the most effective at school.

The fragrant violations of hygiene requirements in schoolchildren's regime were revealed: the exceeding time limit for doing the homework, the lack or absence of time for physical activity and being out of doors, the shortage of night sleeping time. Majority of schoolchildren have their physical activity only during the physical education lessons, thus the consideration of their health conditions, physical development and abilities are the best means for both diseases prophylaxis and lethal cases.

Список літератури

1. Айвазян С. А. Анализ синтетических категорий качества жизни населения субъектов Российской Федерации: их измерение, динамика, основные тенденции / С. А. Айвазян // Уровень жизни населения регионов России. – 2002. – № 11. – С. 1–38.
2. Баженов С. А. Качество жизни населения: теория и практика / С. А. Баженов, Н. С. Маликов // Уровень жизни населения регионов России. – 2002. – № 2. – С. 1–46.
3. Букша С. Б. Актуальність формування професійної відповідальності у майбутніх учителів основ здоров'я / С. Б. Букша, В. І. Бабич // Вісник Луганського національного університету імені Тараса Шевченка. – 2010. – № 8. – С. 18–22.
4. Булич Э. Г. Здоровье человека: биологическая основа жизнедеятельности и двигательная активность в ее стимуляции / Э. Г. Булич, И. В. Муравов. – К. : Олимпийская литература, 2003. – 424 с.
5. Вайнер Э. Н. Образовательная среда и здоровье учащихся / Э. Н. Вайнер // Валеология. – 2003. – № 2. – С. 35–39.
6. Горбась І. М. Фактори ризику серцево-судинних захворювань: поширеність і контроль / І. М. Горбась // Здоров'я України. – 2007. – № 21/1. – С. 62–63.
7. Коренев М. М. Здоров'я дітей шкільного віку – проблеми та засоби їх вирішення / М. М. Коренев, Г. М. Даниленко // Журнал академії медичних наук України. – 2007. – Т. 13. – № 3.
8. Лібанова Е. М. Прогноз демографічного розвитку України на період до 2050 року / Е. М. Лібанова // Демографія та соціальна економіка. – 2007. – № 1. – С. 23–37.
9. Мороз Г. З. Пам'ятка для пацієнта з гіпертонічною хворобою / Г. З. Мороз, І. М. Гідзинська // Therapia. – 2010. – № 9. – Режим доступу : <http://therapia.ua/therapia/2010/09>
10. Особливості адаптації серцево-судинної системи до систематичного навчання та методи корекції її порушень у дітей молодшого шкільного віку / Квашніна Л. В., Маковкіна Ю. А., Ігнатова Т. Б. Матвійчук В. В. // Перинатологія і педіатрія. – 2008. – № 4 (36). – С. 38–44.
11. Приступа Є. Н. Концепція вільного часу людини як важлива категорія рекреації [Електронний ресурс] // Спортивна наука України. – 2008. – № 5. – С. 9–22. – Режим доступу : <http://nbuv.gov.ua/e-journals/SNU/2008-5/08pynf.pdf>
12. Приступа Є. Н. Завищені нормативи чи слабкі діти? / Є. Н. Приступа // Дзеркало тижня. – 2011. – № 9. – Режим доступу : http://dt.ua/HEALTH/zavischeni_normativi_chi_slabki_diti-77191.html
13. Приступа Є. Н. Роль і місце фахівця з фізичної реабілітації в системі охорони здоров'я населення / Є. Н. Приступа, А. С. Вовканич // Педагогіка, психологія та медико-біологічні проблеми фізичного виховання і спорту. – 2011. – № 9. – С. 92–96.
14. Рівень і тенденції поширення тютюнокуріння, вживання алкоголю та наркотичних речовин серед учнівської молоді України / О. М. Балакірева, Т. В. Бондар, Н. О. Рингач [та ін.] – К. : Український інститут соціальних досліджень ім. О. Яременка, 2008. – 152 с.
15. Смертность в дотрудоспособном возрасте: тенденции и потенциальные потери / Альбицкий В. Ю., Зыятдинов К. Ш., Никольская Л. Ф., Глушаков Ф. И. – Казань, 1999. – 100 с.
16. American college of sports medicine. Position Stand. Exercise and hypertension / L. S. Pescatello, B. A. Franklin, R. Fagard [et al.] // Med. Sci. Sports Exerc. – 2004. – V. 36. – P. 533–553.
17. Branca F. The challenge of obesity in the WHO European Region and the strategies for response / F. Branca, H. Nikogosian, T. Lobstein. – WHO, 2009. – 392 p.
18. Change in tobacco use among 13–15-year olds between 1999 and 2008: findings from the Global Youth Tobacco Survey / C. Warren, V. Lea, J. Lee [et al.] // Global Health Promotion. – 2009. – Vol. 16. – P. 38–90.
19. CIA World Factbook 2009 [Electronic resource]. – Режим доступу : <https://www.cia.gov/library/publications/the-world-factbook/fields/2102.html>

20. Dietary intake and nutritional status of children and adolescents in Europe / J. Lamberta, C. Agostonia, I. Elmadfaa [et al.] // *British Journal of Nutrition*. – 2004. – Vol. 92, Suppl. 2. – P. 147–211.
21. *Elmadfa I.* European nutrition and health report 2004 / I. Elmadfa, E. Weichselbaum // *Annals of Nutrition and Metabolism*. – 2004. – Vol. 48, Suppl. 2. – P. 1–16.
22. European Status Report on Alcohol and Health, 2010. – World Health Organization, 2010–373 p. – Режим доступу : http://www.euro.who.int/_data/assets/pdf_file/0004/128065/e94533.pdf.
23. *Goya Wannamethee S.* Physical activity and mortality in older men with diagnosed coronary heart disease / S. Goya Wannamethee, G. Shaper, M. Walker // *Int. Med. J.* – 2002. – Vol. 3. – P. 201–207.
24. Tracking of physical activity, fitness, body composition and diet from adolescence to young adulthood: the Young Hearts Project, Northern Ireland / C. Boreham, P.J. Robson, A. M. Gallagher [et al.] // *International Journal of Behavioral Nutrition and Physical Activity*. – 2004. – Vol. 1. – Режим доступу : <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC524366>.
25. U.S. Department of Health and Human Services. Healthy People 2010: Understanding and improving health ; Objectives for improving health (2 vol.). – Washington, DC: Government Printing Office ; 2000 – Режим доступу : <http://www.healthypeople.gov/>
26. Young people's health in context. Health Behaviour in School-aged Children (HBSC) study : international 2001/2002 survey / C. Currie, Ch. Roberts, A. Morgan [et al.] – Copenhagen : WHO Regional Office for Europe, 2004. – Режим доступу : <http://www.hbsc.org/publications/reports.html>.

**PRELIMINARY ANALYSIS
OF REASONS OF LETHAL CASES
DURING PHYSICAL EDUCATION LESSONS**

**Yevhen PRYSTUPA, Andriy VOVKANYCH,
Yuriy PETRYSHYN**

*Lviv State University of Physical Culture, Lviv,
Ukraine, e-mail: avovkinfiz@i.ua*

Abstract. The problem of lethal cases in secondary schools in Ukraine during the physical education lessons has been considered in the and the attempt to find out their reasons has been made. The authors have proved not substantiality of affirmation dealing with negative influence of physical exercises on health of schoolchildren utilizing analysis of literature sources; find out that the problem of lethal cases at physical education lessons is the phenomenon existing in different countries of the world; distinguished factors, which possess crucial negative influence upon the decrease of health of school age youth. Proposals dealing with improvement of the functional state of schoolchildren by increase of efficiency of physical activity have been made.

Keywords: schoolchildren, physical education lessons, lethal cases, level of health.

References

1. *Ajvazjan S.A.* Analiz sinteticheskikh kategorij kachestva zhizni naselenija subjektov Rossijskoj federacii: ih izmerenie, dinamika, osnovnye tendencii [Analysis of the synthetic categories of life quality of the Russian Federation population : their dimension, dynamics, key trends] // *Uroven' zhizni naselenija regionov Rossii*, 2002, № 11, S. 1–38. (*in Russian*)
2. *Bazhenov S.A., Malikov N.S.* Kachestvo zhizni naselenija: teorija i praktika [Quality of Life: Theory and Practice] // *Uroven' zhizni naselenija regionov Rossii*, 2002, № 2, S. 1–46. (*in Russian*)
3. *Buksha S.B., Babych V.I.* Aktual'nist' formuvannya profesijnoyi vidpovidal'nosti u maybutnikh uchyteliv osnov zdorov'ya [The relevance of professional responsibility formation of future teachers of health basics] // *Visnyk Luhans'koho natsional'noho universytetu imeni Tarasa Shevchenka*, 2010, № 8, S. 18–22. (*in Ukrainian*)

4. *Bulich Je. G., Muravov I. V.* Zdorov'e cheloveka: biologicheskaja osnova zhiznedejatel'nosti i dvigatel'naja aktivnost' v ee stimuljacii [Human health : biological basis of life and its motor activity stimulation], K. : Olimpijskaja literatura, 2003, 424 s. (in Russian)
5. *Vajner Je. N.* Obrazovatel'naja sreda i zdorov'e uchashhihsja [Educational environment and the health of students] // *Valeologija*, 2003, № 2, S. 35–39. (in Russian)
6. *Horbas' I. M.* Faktory ryzyku sertsevo-sudynnykh zakhvoryuvan': poshyrenist' i kontrol' [Risk factors for cardiovascular disease: prevalence and control] // *Zdorov'ya Ukrainy*, 2007, № 21/1, S. 62–63. (in Ukrainian)
7. *Korenyev M. M., Danylenko H. M.* Zdorov'ya ditey shkil'noho viku – problemy ta zasoby yikh vyrishennya [Health of school children – problems and means for their solution] // *Zhurnal akademiyi medychnykh nauk Ukrainy*, 2007, T.13, № 3. (in Ukrainian)
8. *Libanova E. M.* Prohnoz demografichnoho rozvytku Ukrainy na period do 2050 roku [Prediction of demographic development of Ukraine till 2050] // *Demografiya ta sotsial'na ekonomika*, 2007, № 1, S. 23–37. (in Ukrainian)
9. *Moroz H. Z., Hidzyns'ka I. M.* Pam'yatka dlya patsiyenta z hipertoničnoyu khvoroboyu [Memo for patients with essential hypertension] [Electronic resource] // *Therapia*, 2010, № 9, Access mode : <http://therapia.ua/therapia/2010/09> (in Ukrainian)
10. *Kvashnina L. V., Makovkina Yu. A., Ihnatova T. B., Matviychuk V. V.* Osoblyvosti adaptatsiyi sertsevo-sudynnoyi systemy do systematichnoho navchannya ta metody korektsiyi yiyi porushen' u ditey molodshoho shkil'noho viku [Features of cardiovascular system adaptation to the systematic training and methods for correcting of its violations of children early school age] // *Perynatolohyya y pedyatriya*, 2008, № 4 (36), S. 38–44. (in Ukrainian)
11. *Prystupa Ye. N.* Kontseptsiya vil'noho chasu lyudyny yak vazhlyva katehoriya rekreatsiyi [The concept of free time as an important category of human recreation] [Electronic resource] // *Sportyvna nauka Ukrainy*, 2008, № 5, S. 9–22, Access mode : <http://nbuv.gov.ua/e-journals/SNU/2008-5/08pynf.pdf> (in Ukrainian)
12. *Prystupa Ye. N.* Zavyshcheni normatyvy chy slabki dity? [Excessive standards or weak children?] [Electronic resource] // *Dzerkalo tyzhnya*, 2011, № 9, Access mode : http://dt.ua/HEALTH/zavischeni_normativi_chi_slabki_diti-77191.html (in Ukrainian)
13. *Prystupa Ye. N., Vovkanych A. S.* Rol' i mistse fakhivtsya z fizychnoyi reabilitatsiyi v systemi okhorony zdorov'ya naseleण्या [Role and place of the specialist in physical rehabilitation in the health care system] // *Pedahohika, psykholohiya ta medyko-biolohichni problemy fizychnoho vykhovannya i sportu.* – 2011. – № 9. – S. 92–96. (in Ukrainian)
14. *Balakyryeva O. M., Bondar T. V., Rynhach N. O.* [ta in.] Riven' i tendentsiyi poshyrennya tyutyunokurinnya, vzhyvannya alkoholyu ta narkotychnykh rehovyn sered uchnivs'koyi molodi Ukrainy [Level and the trends of tobacco use, alcohol and narcotic substances of school youth in Ukraine], K. : Ukrainy'kyy instytut sotsial'nykh doslidzhen' im. O. Yaremenka, 2008, 152 s. (in Ukrainian)
15. *Al'bickij V. Ju., Zyjatdinov K. Sh., Nikol'skaja L. F., Glushakov F. I.* Smertnost' v dotrudospodobnom vozraste: tendencii i potencial'nye poteri [Mortality in non-working age: trends and potential loss], Kazan', 1999, 100 s. (in Russian)
16. *Pescatello L. S., Franklin B. A., Fagard R.* [et al.] American college of sports medicine. Position Stand. Exercise and hypertension // *Med. Sci. Sports Exerc*, 2004, V. 36, P. 533–553.
17. *Branca F., Nikogosian H., Lobstein T.* The challenge of obesity in the WHO European Region and the strategies for response, WHO, 2009, 392 p.
18. *Warren C., Lea V., Lee J.* [et al.] Change in tobacco use among 13–15-year olds between 1999 and 2008 : findings from the Global Youth Tobacco Survey // *Global Health Promotion*, 2009, Vol. 16, P. 38–90.
19. CIA World Factbook 2009 [Electronic resource], Access mode : <https://www.cia.gov/library/publications/the-world-factbook/fields/2102.html>
20. *Lamberta J., Agostonia C., Elmadfaa I.* [et al.] Dietary intake and nutritional status of children and adolescents in Europe // *British Journal of Nutrition*, 2004, Vol. 92, suppl. 2, P. 147–211.

21. *Elmadfa I., Weichselbaum E.* European nutrition and health report 2004 // *Annals of Nutrition and Metabolism*, 2004, Vol. 48, suppl. 2, P. 1–16.
22. European Status Report on Alcohol and Health, 2010, [Electronic resource], World Health Organization, 2010, 373 p., Access mode : http://www.euro.who.int/_data/assets/pdf_file/0004/128065/e94533.pdf.
23. *Goya Wannamethee S., Shaper G., Walker M.* Physical activity and mortality in older men with diagnosed coronary heart disease // *Int. Med. J.*, 2002, Vol. 3, P. 201–207.
24. *Boreham C., Robson P.J., Gallagher A.M. [et al]* Tracking of physical activity, fitness, body composition and diet from adolescence to young adulthood: the Young Hearts Project, Northern Ireland [Electronic resource] // *International Journal of Behavioral Nutrition and Physical Activity*, 2004, Vol. 1, Access mode : <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC524366>.
25. U.S. Department of Health and Human Services [Electronic resource]. *Healthy People 2010 : Understanding and improving health ; Objectives for improving health (2 vol.)*, Washington, DC : Government Printing Office; 2000, Access mode : <http://www.healthypeople.gov/>
26. *Currie C., Roberts Ch., Morgan A. [et al.]* Young people's health in context [Electronic resource]. *Health Behaviour in School-aged Children (HBSC) study : international 2001/2002 survey*, Copenhagen : WHO Regional Office for Europe, 2004. – Access mode : <http://www.hbsc.org/publications/reports.html>

Стаття надійшла до редколегії 17.07.2015

Прийнята до друку 13.10.2015

Підписана до друку 30.09.2015