

## **Promoting and supporting physical activity and sport among young people in the Republic of Moldova**

*Promovarea și susținerea activităților fizice și sportului printre tinerii din Republica Moldova*

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### **Abstract**

*Background.* The health status of the young generation is an important indicator of the well-being for the society and the state, which reflects not only the current situation, but also the prospects for the future. The practice of physical activity and sport must ensure the formation of healthy and dynamic youth, capable of creative activities, in order to form an integral, creative and autonomous personality.

*Aims.* Health status assessment of children, adolescents and conditions of practicing physical exercise and sport.

*Methods.* A longitudinal descriptive study of pupils' health status and conditions of practicing physical exercises and sport within the pre-university institutions in the Republic of Moldova was carried out.

*Results.* The complex assessment of pupils' health status dynamics following the results of prophylactic medical examinations reveals the presence of some deficiencies in physical development. The provision of pre-university institutions with sports halls and additional sanitary facilities for practicing sport is precarious, registering significant territorial differences. General schools in the Republic of Moldova are provided with sports halls in a proportion of 84.6%. But the possibilities of practicing physical exercise and sport in extracurricular activities are limited.

*Conclusions.* Against the background of an unstable socio-economic situation, characteristic for the development of the Republic of Moldova over the last two decades, negative trends in the health status of children and adolescents in all age groups have been formed. There is still a problem with the provision of sports halls and sports grounds for practicing physical activities in schools in the Republic of Moldova.

**Keywords:** health status, physical exercises, pre-university institutions, children and adolescents

### **Rezumat**

*Premize.* Starea de sănătate a generației tinere este un indicator important al bunăstării societății și a statului, care reflectă nu numai situația actuală, ci și perspectivele pentru viitor. Practicarea activităților fizice și sportului trebuie să asigure formarea unui tineret sănătos și dinamic, capabil de activități creative, în vederea formării unei personalități integrale, creative și autonome.

*Obiective.* Evaluarea stării de sănătate a copiilor și adolescenților și a condițiilor de practicare a exercițiilor fizice și sportului.

*Metode.* A fost efectuat un studiu descriptiv, longitudinal al stării de sănătate a elevilor și condițiilor de practicare a exercițiilor fizice și sportului în instituțiile preuniversitare din Republica Moldova.

*Rezultate.* Evaluarea complexă a dinamicii stării de sănătate a elevilor, după rezultatele examenelor medicale profilactice, atestă existența unor deficiențe în dezvoltarea fizică. Asigurarea instituțiilor preuniversitare cu săli sportive și dotări sanitare adiționale practicării sportului este precară, înregistrându-se diferențe teritoriale semnificative. Școlile generale din Republica Moldova sunt asigurate cu săli sportive în proporție de 84,6%. Dar, posibilitățile de practicare a exercițiului fizic și sportului în activități extrașcolare sunt limitate.

*Concluzii.* Pe fondul situației socio-economice instabile, caracteristică pentru dezvoltarea Republicii Moldova în ultimele două decenii, s-au format tendințe negative privind starea de sănătate a copiilor și adolescenților din toate grupele de vârstă. În școlile din Republica Moldova există încă problema asigurării cu săli sportive și terenuri sportive pentru practicarea activităților fizice.

**Cuvinte cheie:** stare de sănătate, exerciții fizice, instituții preuniversitare, copii și adolescenți

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## Introduction

During childhood and adolescence, physical education in school offers an excellent opportunity to learn and practice the skills necessary for the improvement of physical and health status throughout life. Early acquisition of basic skills makes it crucial for children and adolescents to practice and better understand the value of these activities in their later education.

The continuous unfavorable trend of aggravation of children's health status in the Republic of Moldova has become stable enough to pose a real threat to the national security of the country. A decrease in the birth rate, an increase in infant mortality, a significant reduction in the proportion of healthy children at birth, an increase in the number of people with childhood disabilities and patients with chronic pathology have been reported. The natural growth rate for over 15 years has been a negative one.

Undoubtedly, the marked and persistent tendency of deterioration of children's health will cause a deterioration of health status in all age groups and will inevitably affect the quality of work resources, the reproduction of future generations, and implicitly the sustainable development of the state (Iziumov et al., 2010; Manole et al., 2015).

The analysis of the current situation shows that the main reasons are the social and economic instability of society, the precarious health condition of children's living environment, the unfavorable ecological situation, the reckless reform of the education and health system, the reduced activity of health promotion and education of the population, the decrease of preventive measures, etc. (Pattison & Boderscova, 2012; Dumitrache et al., 2013; Cazacu-Stratu et al., 2015).

Many epidemiological studies show that increasing morbidity in the young population is also associated with a constant increase in educational burden, psychoemotional overstrain and hypodynamics, as well as the refusal to lead a healthy lifestyle (which begins in the family) (Bucșa, 2011; Gustiuc, 2015; Leșco, 2015).

In this context, increasing the life expectancy of the citizens of the country is a primary task of the state. In order to achieve it, it is necessary to strengthen the population's health status, primary and secondary disease prevention and the formation of a healthy lifestyle among people of all ages.

In all policy papers elaborated over the last years, special attention is paid to physical activity and sport practice (2); (3); (4); (5); (6).

The current study aimed to assess the health status of children, adolescents and conditions of practicing physical exercise and sport in order to develop a system of measures to promote health, physical education and sport in the Republic of Moldova.

## Hypothesis

Physical activity is one of the indispensable conditions of a healthy lifestyle for the formation and strengthening of health throughout the whole life, and the education of the need to practice physical exercise must be grounded since childhood and adolescence. This requires an adequate infrastructure, both at curricular and logistic level. The

existence of an interdependent connection was supposed between the presence of conditions for practicing physical exercise, the training program and the health status of pupils in the Republic of Moldova.

## Material and methods

A longitudinal descriptive study of pupils' health status and conditions for practicing physical exercises and sport within pre-university institutions in the Republic of Moldova was carried out, according to the protocol approved by the Ethics Committee of the Nicolae Testemitanu State University of Medicine and Pharmacy.

### *Research protocol*

#### *a) Period and place of the research*

The research was carried out during the period January-June 2018, and comprised 35 first level administrative territorial units.

#### *b) Subjects and groups*

The pupils' health status was assessed based on the results of the medical examination performed annually in all pre-university institutions in the country. The general health status, basic anthropometric indices and neuropsychological developmental indices were evaluated during the examination. The results of the medical examination of 371,253±269.17 pupils (98.6-99.7% out of the total number of pupils) were analyzed.

The pupils' morbidity was studied according to the statistical report f-12A/e "Report on pupils' morbidity" submitted quarterly by pre-university institutions to the Territorial Public Health Centers, the annual data being centralized at the National Agency for Public Health.

The health groups were assessed based on physical development, frequency and duration of illnesses.

The hygienic assessment of the content and educational conditions of the physical culture classes in the pre-university institutions was conducted based on the results of the current sanitary surveillance presented by the Territorial Public Health Centers. The presence of sports halls, social-sanitary facilities, functionality and hygienic conditions for practicing physical exercises was evaluated.

#### *c) Methods applied*

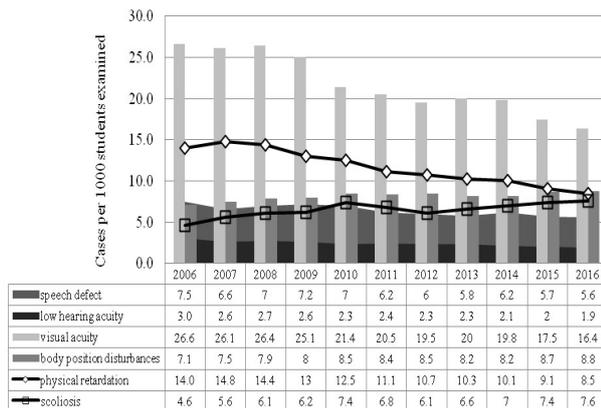
The reports on the results of medical examinations, on pupils' morbidity were collected within the current research. For the hygienic feature of the sports halls of pre-university institutions in the Republic of Moldova, a questionnaire consisting of 5 open questions and 15 closed questions was drawn up, after which the results of the current sanitary surveillance conducted by the Territorial Public Health Centers were totalized.

#### *d) Statistical processing*

The intensive and extensive indices of the incidence and prevalence of physical and neuropsychiatric development deficiencies, general morbidity and health groups of pupils, depending on sex, primary and gymnasium levels, were determined in their dynamics during the years 2006-2016. The overall morbidity assessment was carried out according to the International Classification of Diseases, WHO 10<sup>th</sup> revision. The analysis of the obtained results was conducted by applying the sanitary statistical methods for small random selections, using the software *Microsoft Excel*, *EpiInfo - 3.5.4*, *EpiMax Table*.

## Results

The complex assessment of pupils' health status dynamics according to the results of the prophylactic medical examinations attests the existence of some physical development deficiencies. The structure of the registered deficiencies is dominated by low visual acuity (26.6-16.4 cases in 1000 examined children), followed by physical retardation (14.8-8.5 cases in 1000 examined children), behavioral disorders (7.1-8.8 cases in 1000 examined children), scoliosis (4.6-7.6 cases in 1000 examined children), speech defects (7.5-5.8 cases in 1000 examined children), and low hearing acuity (2.1-3.0 cases in 1000 examined children) (Fig. 1).



**Fig. 1** – The health status evolution of children in the Republic of Moldova according to the results of medical examinations

The high prevalence of low visual acuity is characteristic for 2<sup>nd</sup>-4<sup>th</sup> and 5<sup>th</sup>-8<sup>th</sup> form pupils, especially in urban environment; physical retardation - for pupils in rural environment; behavioral disorders - among pupils in urban environment, and speech defects - among school pupils in urban environment, at the level of municipalities,

especially in primary school pupils. Low hearing acuity rates are higher in rural environment, especially in 2<sup>nd</sup>-4<sup>th</sup> form pupils.

Physical inactivity is one of the determinant factors of physical retardation and behavioral disorders, which is why we will further elucidate the evolution of these two deficiencies.

Thus, the number of physical retardation cases gradually decreases throughout the estimated period, from 14.8 in 2007 to 8.5 in 1000 examined cases - in 2016. The highest rates are registered at the level of districts, among 1<sup>st</sup> form pupils (25.7-35.1‰). Values below the average republican level are attested among 9<sup>th</sup>-12<sup>th</sup> form pupils (12.2-8.0‰).

At the same time, behavioral disorders show a gradual and constant increase, from 7.1 in 1000 examined children in 2006 to 8.8 in 2016. This dynamics is found in all age groups. The highest rates are characteristic of 1<sup>st</sup> form pupils (13.6‰-18.2‰), followed by 2<sup>nd</sup>-4<sup>th</sup> form pupils (10.2‰ and 12.8‰) and 5<sup>th</sup>-9<sup>th</sup> form pupils (9.8‰ and 12.7‰). As for the evolution recorded in high school pupils, it is worth mentioning the doubling of the number of retarded people in the last year of the observation period, which equals 6.8‰ in 2006 and 14.2‰ in 2016.

No less important in the health status assessment of children and adolescents is the evaluation of the physical development degree. In the current study, the mean body mass was estimated at 79.8±2.42% for 10-14-year-old children and 81.7±1.89% for 15-17-year-old children. Body mass deviations in both adolescence periods were significantly more frequently reported as underweight (14±2.36% and 11.3±1.80%, respectively), especially in people aged 10-14, living in urban environment, of both sexes – 15.6±3.45% and 13.4±1.20% for females and males, respectively.

Normal height occurred with the same frequency in both age groups (79.9±3.24%). Among deviations, low height was registered more frequently: 12.3±1.74% and

**Table I**  
Level and structure of general morbidity of pupils, average data, years 2006-2016

Disease	Morbidity indications, M±m				Rank	
	Incidence		Prevalence		Incidence	Prevalence
	per 1000 pupils	%	per 1000 pupils	%		
General morbidity	464.0±13.11	100	724.0±28.31	100		
Including chronic morbidity	100.2±23.02	26.9±2.70	324.1±36.80	44.8±7.15		
Infectious diseases (A00-B64)	4.7±1.89	1.1±0.44	39.3±2.48	5.4±1.48	XIII	IX
Parasitic diseases (B65-B83)	40.3±6.73	8.3±1.13	36.6±9.84	5.1±1.40	IV	X
Diseases of the blood, hematopoietic organs and disorders of the immune mechanism (D50-D89)	33.5±5.46	7.1±1.16	57.9±4.36	8.0±2.13	V	V
Iron deficiency anemia (D50)	32.8±6.12	6.9±1.35	69.1±4.23	9.5±2.48	VI	III
Endocrine, nutrition and metabolism disorders (E00-E90)	8.3±7.72	11.0±1.37	13.4±6.80	1.9±0.54	II	XIV
Obesity (E66)	12.0±1.64	2.5±0.32	28.3±2.12	3.9±1.08	XIII	XII
Mental and behavioral disorders (F00-F99)	4.9±0.62	1.0±0.17	29.6±2.51	4.1±1.14	XIV	XI
Diseases of the nervous system (G00-G99)	37.7±3.99	8.1±0.82	57.3±2.48	7.9±2.10	V	VI
Diseases of the respiratory system (J00-J99)	97.4±8.78	21.0±1.86	395.4±5.23	54.6±7.16	I	I
Diseases of the eye and its appendages (H00-H59)	41.3±2.26	9.0±0.60	72.6±5.74	10.0±2.60	III	II
Diseases of the ear and mastoid apophysis (H60-H95)	6.8±0.27	1.5±0.05	9.2±0.46	1.3±0.37	XIV	XVI
Diseases of the circulatory system (I00-I99)	34.1±3.63	7.4±0.99	19.2±2.58	2.7±0.76	VI	VIII
Diseases of the digestive system (K00-K99)	47.9±9.95	11.0±1.89	68.2±4.30	9.4±2.46	II	IV
Gastritis, duodenitis (K29)	23.2±5.86	5.3±1.34	46.1±2.21	6.4±1.73	IX	VIII
Skin and subcutaneous tissue diseases (L00-L99)	4.4±1.08	3.2±0.83	6.5±1.54	0.9±0.26	XII	XVII
Diseases of the genitourinary system (N00-N99)	17.8±2.39	4.0±0.40	39.4±2.32	5.4±1.48	XI	IX
Diseases of the osteoarticular system (M00-M99)	23.6±5.45	4.8±1.10	56.1±2.54	7.7±2.05	X	VII
Injuries (T00-T98)	7.5±1.31	1.5±0.16	11.6±2.30	1.6±0.46	XIV	XV

7.8±1.36% ( $p<0.05$ ), in pupils aged 10-14 and 15-17, respectively. Among children aged 10-14, low height levels were more frequently found in those from urban environment, and for children aged 15-17 – in those from rural environment, both males and females (15.8±0.73% and 11.3±1.02%).

In general, the multiannual dynamics of the general morbidity of pupils in the Republic of Moldova is characterized by a peak of maximum incidence and prevalence in 2007 (484.5‰ and 246.3‰) and by close values in the other years.

The mean level of the general morbidity incidence of pupils is 464.0±13.11 cases in 1000 pupils and that of the general morbidity prevalence is 724.0±28.31 cases in 1000 pupils (Table I), being determined in a proportion of 21.6±4.70% and 44.8±7.15%, respectively, of chronic pathology. Among pathology classes with a maximum level of incidence are listed respiratory system diseases (J00-J99) – 97.4±8.78‰, endocrine, nutritional and metabolic diseases (E00-E90) – 48.3±7.72‰, diseases of the eye and its appendages (H00-H59) – 41.3±2.26 ‰ and parasitic diseases (B65-B83) – 40.3±6.73‰. At the same time, the prevalence of general morbidity is preponderantly determined by respiratory system diseases (J00-J99) – 54.6±7.16‰, diseases of the eye and its appendages (H00-H59) – 72.6±5.74 ‰, iron deficiency anemia (D50) – 69.1±4.23‰ and digestive system diseases (K00-K99) – 68.2±4.30‰.

A higher prevalence is found in upper form pupils – 820.3‰ versus 558.2‰ in primary form pupils ( $p<0.05$ ). It is worth mentioning that the spread of chronic diseases increases with age, registering insignificantly higher shares in pupils from rural environment – 28.5% versus 25.2% in urban environment ( $p>0.05$ ).

The structure of the main disease classes is of interest. Thus, respiratory pathology is represented by chronic diseases of tonsils (43.4±13.38%) and chronic bronchitis (15.6±4.39%); digestive system pathology - by gastritis, duodenitis (48.4±1.34%), ophthalmologic pathology - by decreased visual acuity (82.8±0.04%), disorders of the blood and hematopoietic organs - by anaerobic anemia (97.9±12.02%), endocrine diseases - by obesity (24.8±4.11). Although the pathology of the circulatory system ranks only 6<sup>th</sup> in the structure of general morbidity, a very alarming fact was highlighted – 32.9±21.97% of disease cases are represented by chronic rheumatic cardiopathy. The analysis of the correlation between the registration level of chronic tonsillitis and rheumatic cardiac disease revealed the existence of an obvious direct positive connection ( $r=0.73$ ).

The proportion of healthy children during the analyzed period is 28.9±2.13%, that of children with functional deviations – 45.3±4.26%, with chronic diseases – 25.8±3.23%. The smallest share of healthy pupils was recorded in the late adolescence period – 2.7±1.21% ( $p<0.05$ ). 20-27% of pupils were certified with two or more comorbidities (depending on age and the place of residence).

On average, 55.0±3.45% of pupils are considered healthy and trained (health group I), 41.0±2.36% are healthy and untrained (health group II) and 4.1±2.08% are

sick frequently and for a long time (health group III).

With regard to physical development, 79.8±2.42% of children aged 10-14 and 81.7±1.89% of children aged 15-17 possess an average body mass. In both adolescence periods, a reduced body mass is significantly more frequently encountered (14±2.36% and 11.3±1.80%, respectively). Body mass deficiency is more typical for urban environment, for both sexes at the age of 10-14 years – 15.6±3.45% and 13.4±1.20% for females and males, respectively.

By integrating the results of the study on pupils' health status in the Republic of Moldova, we can affirm the formation and maintenance over the last two decades of the negative tendencies in the health status of children and adolescents in all age groups.

One of the causes of health problems in children is insufficient physical activity, insufficient sports facilities and hygienic conditions in them.

Because it is generally acknowledged that physical education is a universal mechanism to recover the population's health, a self-achievement and development form as well as a means of fighting anti-social phenomena, we considered important to analyze the situation in the respective area in general pre-university institutions. The criterion used for assessing the physical activity level was the WHO definition, which considers that "*physically active children are those who practice physical exercise for 60 minutes during the day, more than 5 days a week*".

Traditionally, in the Republic of Moldova, the training process of physical education of pupils is carried out, after all, in the form of classes and to a certain extent - within additional familial, extra-curricular, special education and self-education.

According to specialists in the field, the need of the pupils' body with regard to the specially organized motor activity is at least 12-16 hours per week. At present, only 4 hours per week are planned for the national pre-university curriculum. The content of physical culture classes has a training and biological characteristic that, according to the practice of physical education, is less effective, even if their number in the weekly cycle increased. Given that the mean values of the motor density of such classes are 12-15 minutes, it is unlikely to obtain direct cumulative effects, which are the basis and strategy of the training classes.

At the same time, the solution to many problems related to the organization of the physical education methodology according to the scientific-theoretical recommendations is hampered by some gaps which concern: the technical-material, information, didactic provision, as well as professional specialists (including the lack of manuals); the complex and systemic exam of the psychophysical health of children and the qualitative assessment of the didactic process of physical education.

General schools in the Republic of Moldova are provided with sports halls in a proportion of 84.6% (Fig. 2). The general schools in Bălți municipality, Dubăsari, Ceadar-Lunga and Vulcănești districts have a 100% level of sports hall provision. The general schools in Soldănești and Rezina districts have the lowest level of sports hall provision (43.5% and 53.3%, respectively).



Union (Gorobets, 2015).

The study carried out by Bean et al. (2014) shows a broad participation of children and young people in sports activities - 75% in USA and 76.4% in Canada.

In Great Britain, about 40% of the males and females aged 16 or more participate at least in a sport each week. Large-scale cohort studies prove that mortality among persons practicing regular physical activity is 20-40% lower than among those who do not practice sport (Khan et al., 2012).

Children and youth are the main beneficiaries of physical education and sport practice. Early childhood is the time when motor activity is vitally important for socializing. At the beginning of life, the child is sensitive to cognitive and moral development, assumes different roles, learns to distinguish from others, and especially learns to build relations with others (Chahar, 2014). Giving the proper importance to play and games in childhood represents the premise of healthy development on a motor, social and cognitive level. The physical activity required for play and games allows children to gradually adopt different social roles that enable them to acquire competences, habits and skills necessary later in wider contexts. The games create bridges between spontaneous play and institutionalized sport (Nieman, 2002; Bailey, 2006).

An important role in this respect is that of parents. It is wrong to think that children "are energetic anyway" and they do not need to perform physical exercise or to practice a sport. In these cases, the chosen forms of movement are those episodically offered by school holidays: skiing, skating, swimming, playing with the ball, etc. Most of the times (it is also the case of adults), it is the environment that mobilizes them for a certain sports activity, determined by the geographical area (mountain, sea) in which they spend their spare time (Matheson et al., 2013).

An essential role in practicing a type of sport is the theory of social learning which has proved that socialization is best done in a sport environment. The practice of physical activity and sport creates the premises for the development of this environment, recognized as favoring socialization (Bean et al., 2014).

Physical education and sport are considered a means to influence and form the human character with regard to correctness, modesty, courage and last but not least, teamwork (\*\*\*, 2013; Cebanu, 2015; Merkel, 2013). In society, individuals acquire the ability to adapt their attitudes, habits and rules assimilated in sports activities to the specificity of other activities in different fields. The socializing effect of physical activity and sport generates a multitude of positive effects on several categories of beneficiaries.

## Conclusions

1. Against the background of an unstable socio-economic situation, characteristic for the development of the Republic of Moldova over the last two decades, negative trends in the health status of children and adolescents in all age groups have been formed.

2. According to WHO criteria, the majority (about 80%) of pupils in pre-university institutions are physically inactive because they perform physical exercise less than 5

hours a week. Hypodynamics has become one of the basic problems with an unfavorable impact on health status.

3. The provision of general culture institutions with sports halls and additional sanitary facilities for practicing sport is precarious, registering significant territorial differences.

4. The possibilities of extra-curricular practice of physical exercise and sport are limited. The number of sports facilities has a decreasing trend. Extra-curricular sports facilities are few in number, particularly in the private sector, often being inaccessible to many families.

5. In promoting and strengthening the health status of children and adolescents, intersectoral collaboration and permanent relations between professionals in the field of education and health are indispensable for regulation of the requirements of the teaching process, creation of favorable environmental conditions in children's institutions, health promotion activities, etc.

## Conflict of interest

There were no conflicts of interest.

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