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STUDY UPON 6-7 YEARS AGE PRESCHOOL CHILDREN SPINE DISORDERS PROPHYLAXIS

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Abstract

Background: The organizing of physical education with preschool children always was and still is a very actual issue which requires from the specialists to create new approaches according to contemporary social requirements. This article addresses the problem of prophylaxis of the spine deficiencies of preschool children by applying the means of physical education in various forms. Regarding this it was developed a model of the prophylaxis of the spine deficiency in preschool children, which was applied for a one-year period of their education. The recorded results demonstrate the effectiveness of applying the experimental model, which allows us to recommend it for implementation in physical education in preschool institutions.

Objective: In this context the research aim is to experimental argue the efficiency of the physical education means in preschool children spine disorders prophylaxis.

Methods: The methods used are:

1. Specialized literature analysis and generalization in what concerns physical education *for* preschool children;
2. Assessing the physical training and physical development levels of the preschool children in Romania;
3. Spine disorders in preschool children study;
4. Experimental argue for the efficiency of the physical exercise in preschool children spine disorders prophylaxis and recovery.

Conclusion: The scientific evidence based results demonstrate the preschool children physical education process improvement effectiveness. The practical application of the proposed experimental methodology will contribute to the motor training level increase, as well as to the spine disorders prophylaxis for 6-7 years preschool children.

Keywords: preschool children, physical education, prophylaxis, spine disorders, physical development.

Introduction

Social progress at the current stage has led to a considerable reduction in the physical activity of the population, especially children, from the earliest age. More and more they are involved in various static activities, directly or indirectly, using gadgets such as computers, mobile phones, etc.

The results are all kinds of problems with the locomotor system, more specifically the affected state of the spine, basic pillar of the human body. The age of 6-7 years is one in which the skeleton is growing and developing and the specialists in the field of physical education and sports should take into account all the physiological and anatomical laws specific to this age.

Specialists in the field, such as Antonescu M.D. (2008), Blandine C.G. (2009), Gîrleanu L. (2001), Niculescu I.I., (2006), presents a number of recommendations regarding this chapter, but these are in most cases medical, ie the application of various medical devices and, is based on the application of the means acquired in the field of physical education and sport.

Unjustly, in this case, the role of physical exercise for the prophylaxis of the spine deficiencies is diminished. The prophylaxis of the spine deficiencies was the particularly interested issue in our researches and we consider it quite current and absolutely necessary for the physical education of preschool children.

At the same time, very few researches are devoted to prophylaxis of the problems of the locomotor system, including the spine in pre-school children. The need to study this problem results from the fact that the results of several researches initiated by Constantinescu M. (2014, 2015), Constantinescu M., Havriş D., Constantin A. (2010), Fozza C.A. (2002), Mureşan E. (2006) showed that there are an impressive number of pupils in the primary school, those who come from preschool institutions with different types of skeletal deficiencies and among them the most common ones are those of the spine.

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The most common deficiencies of the spine are scoliosis, hiperkyphosis and hiperlordosis. The field specialists propose the widespread use of the means of physical education, ie physical exercise, for the prophylaxis and treatment as far as possible of these malfunctions. Specialists such as Antonescu M.D. (2008), Constantinescu M. (2015), Constantinescu M., Havriş D., Constantin A. (2010), Zavalisca A., Demcenco P., Tuchilă I. (2012), considers that these deformations are easier to prevent than to be treated later, which can be makes it quite difficult and difficult and only by medical means.

In recent years, in most European countries with a well-developed economy, the issue of physical education and development of preschool children has often been and is being addressed. In this regard, the specialists come up with a range of organizational solutions, either in sports activities, which are compulsory in kindergartens, or in other forms of physical education organization, such as morning revival, active breaks, competitions with dynamic games etc.

The prophylaxis of spine deficiencies for preschool children

Starting from the above-mentioned arguments, we can say there is no currently well-founded scientific methodology for preschool children, more specifically 6-7 years, spine deficiencies prophylaxis.

During the academic year 2017-2018, a pedagogical experiment was organized, which aimed at highlighting the level of physical development and training of preschool children from the perspective of physical education activities in preschool education institutions.

In this respect, a detailed analysis of the recorded results was carried out and it was proved that the level of physical development and training of preschool children in Romania and the Republic of Moldavia is well below the standards for this age at all tested parameters.

Also, in this experiment the situation regarding the number of children with deficiencies of the spine, which appeared at the beginning of the age of 6-7 years, ie at the end of the pre-school period, was also analyzed, as well as in the literature, mentioning the authors Constantinescu M. (2015). Constantinescu M., Havriş D., Constantin A. (2010). Zavalişca A., Demcenco P., Tuchilă I. (2012).

From six preschool Romanian institutions we selected a sample in a total number of 522 children, aged between 5 and 6 years, 255 boys and 257 girls.

All of these children were also examined for several parameters related to the assessment of the level of motor training, physical and functional development, as well as highlighting the number of their spine deficiencies.

The aforementioned have directed us to look for effective ways to improve the situation in this regard, referring primarily to the prevention of deficiencies of the spine of preschool children by applying the means of physical education in their training. In this respect, a pedagogical model for the application of the means of physical education in physical education with preschoolers for 5-6 years (Table no. 2) was made.

The given model focuses on three general compartments, these being: the place of sports activities, the use of the means proposed for application in the process of training and assessment of the condition of the spine of children following the application of the means described in the model.

Both block one and block two of the given model focused on two large groups of tools, such as object exercises and objectless exercises.

It is worth mentioning that this model has been applied in the process of teaching children from preschool education institutions in Romania for a period of one year. The children in these institutions have been physically active every day, each time being 30 minutes. Exercises complexes were elaborated (Table no. 1), either in written or graphic form, varied according to the objectives of physical education activities and changed once a week or at least once every two weeks.

The way of completing the exercise complexes was quite simple, where the didactic framework held a complex of exercises, and at the end of the sports activity a dynamic game with concrete tasks was built, based on its goals.

However, children have always received some individual tasks to be done at home under the control of their parents. The content of each task was strictly formulated, or drafted by the teacher, indicating the number of repetitions for each exercise, in order to dose the physical effort.

Parents were informed at the beginning of the year about the purpose of the experiment. There were several ways of communicating with parents, one of these was the by e-mail.

These exercise complexes are not only for the prophylaxis of children's spine deficiencies, but are quite beneficial to improve the level of motivational training, functional training, which in turn will positively influence the overall health of children.

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EXERCISES USING A CHAIR		
Sitting exercises	**Standing exercises**	**Using the chair only as a support tool**
- Both hands to your sides, inhale and slowly raise your hands upwards, exhale and lower your hands back down to your sides; - Bring the right heel forward, the same time you punch with your right arm; the same with the left; - Bend over and place your right palm on the floor, outside your left foot. Extend your left arm up to the heavens. Turn your head to follow your left arm, to gaze at your left hand. Take a moment to feel the stretch, then do the opposite side;	- Stand behind the chair, holding on for balance. Breathe in, breathe out and slowly lift one leg straight back without bending your knee. Hold position for 1 second and then slowly lower your leg; - hold on to the back of the chair, lift up your right foot and balance on your left foot. Hold that position for as long as you can, then switch feet; - Imagine you are standing in the centre of a clock. The number 12 is directly in front of you and the number 6 is directly behind you. Hold the chair with your left hand. Lift your right leg and extend your right arm so it's pointing to the number 12. Next, point your arm towards the number three, and finally, point it behind you at the number 6. Bring your arm back to the number three, and then to the number 12. Look straight ahead the whole time.	- different types of squats - different types of push-ups - different types of abs - different types of hyperextensions
EXERCISES USING A BROOMSTICK		
Broomstick in front	**Broomstick at the back**	**Broomstick in the side**
- Extend the arms straight in front of you. Hold the broomstick from one end and put the other one down. Lean forward, tuck the stomach in, then slightly rock up and down, moving just a few inches; - Hold the broomstick in front of you on both ends, keeping your hands pretty wide. Keep your elbows straight and bring the broomstick overhead and back (but not down). Next, bend your elbows and flex them so that the broomstick ends up close the back of your neck. Finally, extend them back to the starting position.	- Wide grip with your hands holding each end of the broomstick. Keep your elbows straight and lift the broomstick up and over your head. Bring it as far back as you can while keeping your elbows straight; - Hold the middle of the broomstick with one hand. Lift the stick overhead and behind your back and grab it with the free hand from the front side of your body. Slightly rock the arm by pulling with the lower hand, moving it up and down. Make sure your elbow of your upper arm is pointing to the side	- Wide grip on each end of the broomstick. Keep your elbows straight. Lift up one arm and first bring it up overhead, then down at the back side of your body. Imagine you're drawing a circle with the stick. At the same time bring your left hand to the back side of your body, close to your lower back. Next, lift up the left hand and do a similar circle so that the broomstick ends up at the front side of your body, close to your quads. Then, do the right side
EXERCISES USING OWN WEIGHT		

Table no. 1 Exercises complexes for the prophylaxis of spine deficiencies

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THE PROPHYLAXIS OF SPINE DEFICIENCIES FOR PRESCHOOL CHILDREN PEDAGOGICAL MODEL		
USING OBJECTS EXERCISE COMPLEXES	HOME EXERCISE COMPLEXES	USING OWN WEIGHT EXERCISE COMPLEXES
	IN WATER EXERCISE COMPLEXES	
	AT THE GYM EXERCISE COMPLEXES	
	OUTSIDE EXERCISE COMPLEXES	
	DYNAMIC GAMES	
EXERCISE COMPLEXES AND DYNAMIC GAMES FOR ALL THE MUSCLE GROUPS		
USING OBJECTS EXERCISE COMPLEXES	HEAD AND NECK MUSCLE GROUPS	USING OWN WEIGHT EXERCISE COMPLEXES
	UPPER LIMBS MUSCLE GROUPS	
	TRUNK MUSCLE GROUPS	
	LOWER LIMBS MUSCLE GROUPS	
MEDICAL EVALUATION (TESTS)		

Table no. 2 The prophylaxis of spine deficiencies for preschool children pedagogical model

Regarding the methodology of applying exercise complexes for the prevention of spine deficiency in preschools, the didactic framework will take into account the following aspects: the age of the children, the genre, the level of motor training, the level of physical development, the state of health, the deficiencies of the motor system, the place sports activities are performed, inventory available, part of the day (morning, afternoon, evening).

Speaking about the methodology of organizing and running dynamic games, we will point out the following compulsory aspects: child contingent, age, level of motivational training, level of physical development, material conditions of the institution, the place games are performed.

The teacher will see that dynamic game complexes change at least once every two weeks, the number of games played in a sports activity do not exceed 2 games.

Through the pedagogical observations, the didactic framework will highlight the most demanded games for children and these will also be used for educational purposes, serving as a means of motivating children to exercise, increasing the interest in regular attendance of the kindergarten, stimulating sports practice from the beginner levels, even to competition.

One of the basic aims of our research was to highlight the effectiveness of the application of the means of physical education in the prophylaxis of the spine deficiencies in the pedagogical experiment. The means of physical education, according to the experimental methodology presented at the beginning of this chapter, were to be applied daily in the sports activities organized by the teachers. Both at the beginning and at the end of the pedagogical experiment, all children were analyzed with the help of specialized medical staff from preschool education institutions, who would appreciate the number and deficiencies of children at the beginning and end of the experiment.

Table no. 3. Analysis of the spine deficiencies of children aged 6-7 years framed in the pedagogical experiment (boys = 255, girls = 267)

No.	Type of spine deficiencies	Sample	Initial tests	Final tests	Diff (units)	Diff (%)
1	Lordotic attitude	boys	184	21	163	88,59
		girls	86	30	50	65,12
2	Kyphotic attitude	boys	160	35	125	78,13
		girls	82	-	82	100,00
3	Scoliotic attitude	boys	45	5	40	88,89
		girls	133	45	88	66,17

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The authors Constantinescu M. (2014) and Gîrleanu, L. (2001), state in their work that at the age of 6-7 years, children do not yet develop spine diseases such as scoliosis or others, here we have the so-called attitudes like: lordotic attitude, kyphotic attitude, scolitic attitude.

Rezults

So, as mentioned above, 522 children aged 5 to 7 participated in the pedagogical experiment. At the beginning of the school year, all children were examined to find the actual number of children with so-called attitudes, as being prone to some future deficiencies of the spine.

All results were collected, analyzed, statistically processed and presented in Table no.3, and Figures 3-5.

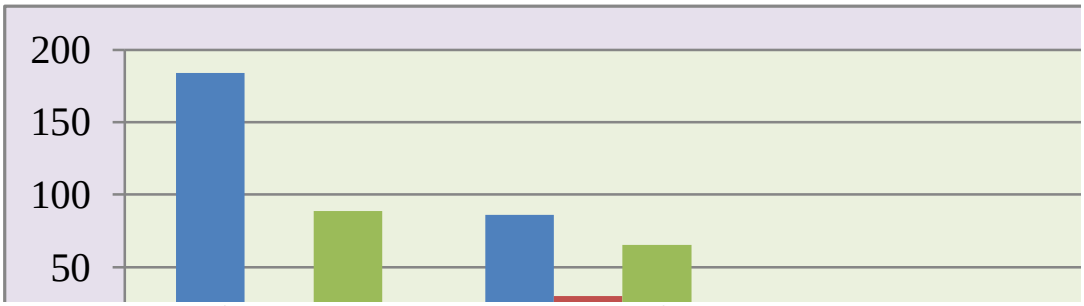

Fig. 3 Analysis of the lordotic attitude children aged 6-7 years framed in the pedagogical experiment

The results recorded after the final medical examinations were as curious as they showed a definite decrease in the number of children prone to spine diseases.

Both boys and girls at the end of the pedagogical experiment recorded a much lower number with spine deficiencies.

More convincing results were recorded in the case of children with kyphotic attitudes, which is also a type of deficiency of normal spine development in preschool children (Fig. 4).

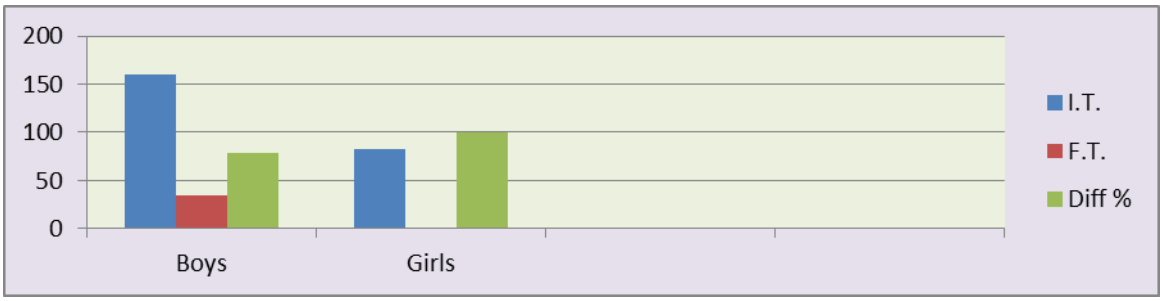

Fig. 4 Analysis of the kyphotic attitude children aged 6-7 years framed in the pedagogical experiment

There is a similar pattern as in the case of children with lordotic attitude, ie the number of children with kyphotic attitude is approximately equal to that of children with lordotic attitudes.

If we are to analyze this indicator, it is very clear that boys at this age tend to develop more spine deficiencies in respect of kyphotic attitude type than the girls. Instead, both groups recover quite efficiently if well-designed means are used for prophylactic purposes.

The third type of spine deficiency analyzed during the experiment was the scolitic attitude of the children (Fig. 5).

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Fig. 5 Analysis of the scoliotic attitude children aged 6-7 years framed in the pedagogical experiment

Scoliotic attitudes in children aged 6-7 are quite common, mostly for girls. In the absence of measures to prevent these, it is likely that the scoliosis will develop, which is hard and sometimes impossible to recover.

Conclusions

Our strengthened findings and literature lead to a common denominator that at the age of 6-7 years, children do not develop spinal cord diseases such as scoliosis or others, here we have the so-called attitudes like: lordotic attitude, kyphotic attitude, scolitic attitude.

It is worth mentioning that many of the children undergoing medical control in this regard are prone to multiple spine deficiencies, which makes the number of children with different spine deficiencies higher than the total number of children.

The recorded results have clearly demonstrated that the use of physical education in preschool institutions and at home, can prevent a large number of children from subsequently having major problems related to their development, especially spine deficiencies.

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