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Pedagogical aspects of child health promotion in the context of pre-school education

Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Data Interpretation
E Manuscript Preparation
F Literature Search
G Funds Collection

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abstract

Background: Early childhood education, care and preschool care at kindergartens in the Czech Republic is geared towards acquiring key competencies in the area of health promotion and the prevention of civilization diseases. Effects of the curricular documents are formulated by the expected outputs. The aim of the submitted partial research is to determine the level of gross motor skills of pre-school age children and to analyze the level of their acquired movement skills in the context of the curriculum documents.

Material and methods: The research group consisted of 115 pre-school children. The level of learned motor skills was monitored by the TGMD-2 test. The Mann-Whitney test was used to determine the significance of differences in the motor skills of pre-school age girls and boys.

Results: In terms of Gross Motor Development Quotient level 63.48% of children (63.38% of boys, 63.77% of girls) in the research group reached a higher average and average level, which we consider to be a positive result, given the valid curriculum of pre-school education.

Conclusions: The results point to the need for regular monitoring of the effects of the education, education and care of a preschool child in nursery schools (kindergartens) in this area.

Key words: kindergarten, education, motor skills, curricular documents.

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INTRODUCTION

The information age in which we live puts demands on the education of a civilized society. The development of the company's technology, the implementation of information systems, the emphasis on critical thinking and the creativity of an individual create the need for education in the youngest age group – pre-school children. Education is a long-term process and investment in the youngest generations enhances the effects of educational processes in older age categories [1]. Retention increases and the stability of acquired skills gains momentum. The network of facilities specializing in pre-school education in various countries of the world is gradually expanding. According to Roser and Ortiz-Ospina [2], with a few exceptions (e.g. South Africa, Iran, Algeria, etc.), the normal age for starting pre-school education for children in most countries of the world is 4 years. But there are countries where there is a more common pre-school education from 2 years (e.g. Canada, Algeria, Libya, Egypt, Iran, Australia and others). The number of children registered in institutions providing pre-school education has steadily increased in recent years – in some areas (North America, South America and Europe), the number of children in nursery schools exceeds 100 million individuals. In countries with a long tradition of pre-school education (e.g. the Czech Republic, Germany, France, Austria, Australia, etc.), nearly 100% of the population attend institutions providing pre-school education, including children with disabilities, early school leavers, or postponing compulsory school attendance. In some countries, the number of private institutions focusing on pre-school education, which are not established by state authorities but subject to its control and management, is growing – for example in India, Iran, Chad, Cameroon, Australia, Burma, etc., it is 60–80% of all pre-school facilities). Despite the efforts to unify the educational policy in Europe, differences in pre-school education are evident from the historical development of education in different countries, cultural differences, geopolitical forces, technological developments and differences in childhood demands and expectations [3–5]. The diversity and complexity of the area of pre-school education requires a multidisciplinary approach between the stakeholders – the institution and the family. Pedagogical approaches to health education and physical education also differ [5–9]. For example in Denmark, children generally spend three to four hours a day outside. Pedagogue-driven activities or activities started by a pedagogue are attended by children in the range of 30 minutes a day, and other activities are chosen by themselves [10].

Preschool education in the Czech Republic has a long tradition. At present, 5209 kindergartens for children 3–6 years old are in operation, of which 1% are religious and 6.7% are private kindergartens. The curriculum of this education is defined by the state document Rámcový vzdělávací program pro předškolní vzdělávání [11, next FEP PE]. Its first version of 2004 has been complemented by a number of changes in recent years. However, fundamental changes to this document occurred in the years 2017–2018, when it was extended to compulsory pre-school attendance of children from the age of five. Kindergartens have also been given an opportunity to receive two-year-olds, and from 2020 it is planned to make it compulsory to take two-year-olds to nursery schools. In order to improve the quality of the educational program, an educational offer has been improved – a number of skills and knowledge that children have to master during pre-school education. The educational aims of pre-school education in the Czech Republic are focused on the universal development of the child, the support of the learning and purposeful learning ability and the acquisition of values preferred by society in the Czech Republic. The gradual development of personal attitudes, such as

personal autonomy, the ability to behave as an individual person, is also preferred. The current version FEP PE [11] meets the criteria of the International Standard Classification of Education [12] required at the pre-primary level. FEP PE [11] develops a child in 5 educational areas: biological, psychological, socio-cultural, interpersonal and environmental. Each nursery school creates a school curriculum on the basis of the state curriculum document and according to their focus and conditions. A kindergarten teacher has formulated partial aims, educational offer and expected outputs and, on the basis of this, creates a classroom program specializing in a group of children (heterogeneous or homogeneous) with whom he/she works during a year (September to August). Health education and physical activities are a natural and integral part of both the day-care regime and a large part of the day-time activities in kindergarten. Its aim is to stimulate and support the growth and the neuromuscular development of the child, to support his/her physical well-being, to improve physical fitness and physical and health culture, to promote the development of movement and manipulation skills, to teach self-care skills, to lead them to a healthy lifestyle and attitudes. The aim of nursery education is, among other things, to develop physical abilities and to promote the acquisition of motor skills from the area of fine and gross motor skills of the child. The requirements of a current curriculum document specify and extend the number of locomotion and manipulation skills which the children's educational program of nurseries established by the state should manage.

In view of the above, the aim of this research is to determine to the level of gross motor skills of the pre-school age children and to analyze the level of their acquired locomotor skills and object control skills.

MATERIAL AND METHOD

The research group comprised 115 children (46 boys; 69 girls) with an average age of 5.13 ±0.75 years from kindergartens in the Czech Republic. None of the children were obese nor had a mental or physical handicap. The participating kindergartens worked according to state curricular documents and in the standard conditions set for pre-school education. The research was realized from May to June 2018. The applied research tools were used exactly according to the manuals. The level of motor skills was determined by the Test of Gross Motor Development-2 [13, next TGMD-2], which monitors the level of locomotor and manipulative skills. Locomotor movement skills are presented by the subtests: run, gallop, jumps on one leg, skipping, jumps two legs and gallop aside. Object control skills are presented by subtests: strike a ball, dribble, catch, kick, overhand throw and underhand roll. The gross motor score is converted to a standard score in the child's age context and further to the Gross Motor Development Quotient [next GMDQ]. GDMQ is divided into seven categories: very poor < 70 points, poor 70–79 points, below average 80–89 points, average 90–110 points, above average 111–120 points, superior 121–130 points, very superior > 130 points. The testing time for children in the gross motor skills level was distributed to the morning hours of the kindergarten where spontaneous activities took place. Testing was always attended by the pedagogical worker of the kindergarten. During the research, children's reactions were monitored and, in the case of negative signs, the testing was canceled. Only complete proband data from complete testing and polling was included in the results. The relationship between the level of locomotion and object control skills was determined by the t-test. The relationship between the level of locomotion and object control skills between

girls and boys was determined by the t-test, and the significance of differences in GMDQ between girls and boys by was determined by the Wilcoxon MP test. Data was processed in STATISTICA 12.0 [14].

Data were collected within the project IGA_PdF_2017_002.

RESULTS

In terms of GMDQ, 63.48% of children (63.38% of boys, 63.77% of girls) in the research group reached a higher than average and average level, which we consider to be a positive result, given the valid curriculum of pre-school education (Fig. 1). A relatively high number of probands (14.78%) are in the lower than average category (10.38% boys, 17.39% girls) and in the poor category (13.04% boys, 2.9% girls). The positive finding is that a relatively high percentage of children (14.79%) of the research population reached the level of superior and very superior GMDQ (13.08% boys, 15.9% girls). A difference was found between boys and girls in the level of GMDQ ($Z = 2.37$; $p \leq 0.02$).

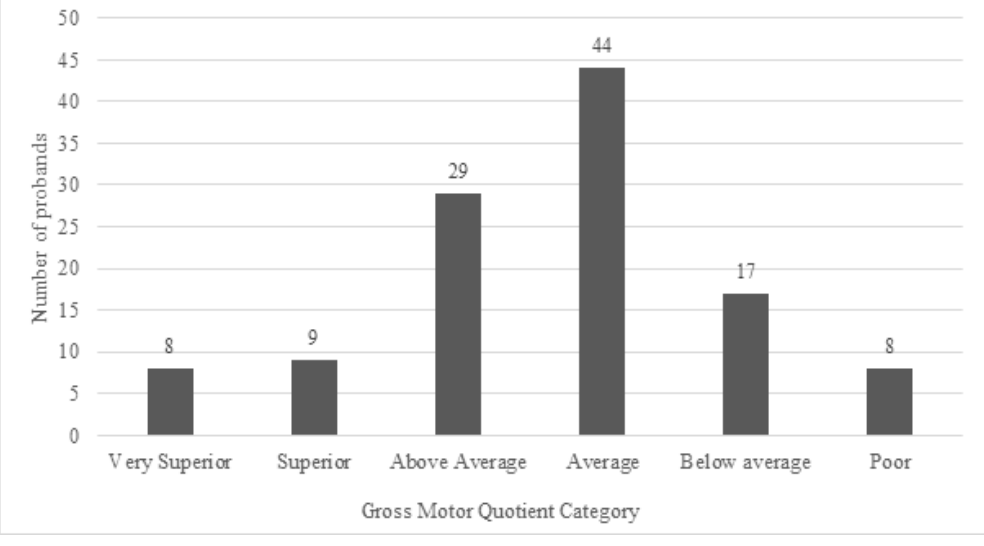

Fig. 1. Frequent occurrence of probands in the Test Gross Motor Development – 2 categories of Gross Motor Development Quotient, n = 115

No differences were found in the level of locomotor skills and object control skills of in the research group ($t = 0.12$, $p \leq 0.05$). However, pre-school girls achieve higher levels of the average score than boys in locomotor skills: gallop, jumps on one leg, jump two legs and gallop aside (Fig. 2). No significant differences were found between boys and girls in the level of locomotor skills ($t = 0.15$, $p \leq 0.05$; $Z = 1.16$, $p \leq 0.24$). Differences were found between boys and girls in the level of object control skills ($t = 0.007$, $p \leq 0.05$; $Z = 4.18$, $p \leq 0.001$) (Fig. 3).

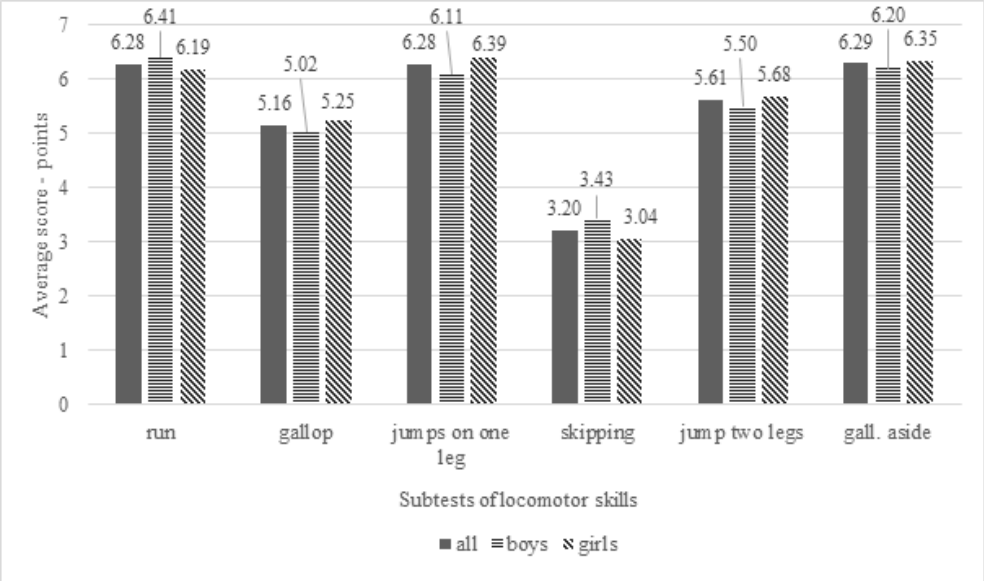

Fig. 2. Locomotor skills (average score – points), n = 115

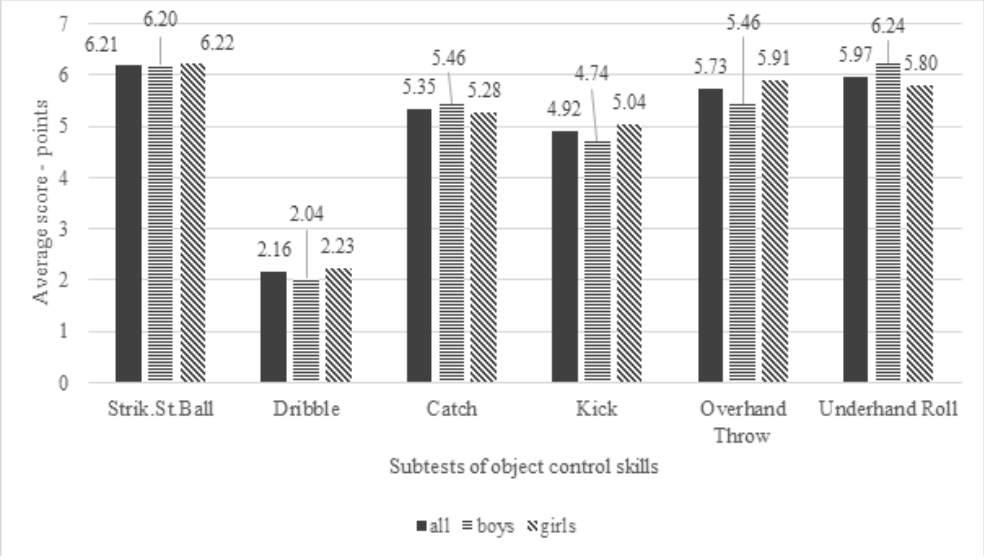

Fig. 3. Object controls skills (average score – points), n = 115

DISCUSSION

Gross motor skills are those that require full body movement and include the activity of large muscle groups to perform everyday activities, such as standing, walking, running, and sitting upright. They also include "eye–hand/foot" coordination skills, such as ball skills (throwing, catching, kicking). They influence other day-to-day activities (for example, the child's ability to maintain a table position), affect the child's ability to participate in fine motor skills (writing, painting, drawing, scissors, gluing, etc.). This subsequently influences the child's academic competencies. Gross motor skills influence all school activities (upright sitting at the desk, moving around the classroom and between classrooms, carrying a briefcase and other school aids, attending school physical education hours, etc.) [15–17]. Efficient and regular physical exercises and activities within the kindergarten support the development of the child's gross motor skills [18,

19]. Aimed interventions to identify deficiencies in the area applied in the youngest age categories bring more pronounced effects in older ages [20, 21]. Higher levels of schools (elementary school, secondary and university) can later on more easily develop and promote this desirable active behavior of children, later pupils and students [22, 23].

Some authors state that in a motor skills test based on running, gallops and jumps girls are more successful [24, 25]. The used test is more complex and requires a higher level of movement coordination in which girls from this research group are probably better. Boys' results may also be affected by parenting that does not prefer physical activities and offers the child only "calmer" activities such as board games, drawing, plasticine modeling, etc. It is also proven that organized physical activity, which is done at nursery school, may reduce activity in more active children [26–28]. The girls in the research group achieved a better average score in strike ball, dribble, kick and overhand throw. Okely et al. [29] or Mckenzie et al. [30] state the possible link between organized physical activity and the level of motor skills. Similar opportunities are offered by nursery schools, where children under the guidance of pedagogues in managed activities can acquire a wider range of physical skills, because they are provided with safety, appropriate conditions and professional methodology. Like Fisher et al. [31], we agree with the prediction of the link between the level of physical activity and the movement skills acquired by the child during his or her life. Restriction in physical activity prevents the acquisition of movement skills, and the low level and low volume of the acquired movement skills are reflected in the reduced movement activity of the child.

CONCLUSIONS

Most of the monitored children showed an average or above average level of gross motor quotient. Girls achieved better results in object control skills and locomotion skills. A statistically significant difference was found between boys and girls in object control skills. The level of motor skills in this context as well as the amount of the acquired motor skills make a significant contribution to the realization of the child's physical activity. These contexts have so far been barely explored, and today, with a gradual decline in the physical activity of children and young people in almost all countries of the world, much more attention should be paid to this issue. Education in this area plays an important role in the prevention of civilization diseases and in the realization of human lifelong activity in the field of health promotion. The results show a need for regular monitoring of the effects of early childhood education, upbringing and care in nursery schools in this area.

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