



## SPONTANEOUS AND ORGANIZED PHYSICAL ACTIVITY OF 6-YEAR-OLD CHILDREN LIVING IN POLAND

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### Abstract

**Purpose.** One of the factors stimulating child's development is rationally programmed regular physical activity defined as physical burden, which a person is subject to during everyday work and free time. Activity may be spontaneous or suitably planned and organized, but only comprehensive activity in different areas is a positive measure of health. Restriction of motor activity, employing it in fragmentary, excessively directed forms, causes negative biological effects of both individual and population character and leads to disorders of biosocial balance. Spontaneous hyperactivity of a child constitutes an integral component of not only physical and motor development, but it also influences on psychical and social sphere.

The objective of the paper is the analysis of the level of physical activity among 6-years-old children from Poland.

**Methods.** The material of the study contains findings of the research on children accomplishing in pre-school departments of schools and nurseries in randomly chosen institutions in all regions of Poland. The studies of the children were done in 2006 in months September – October. The investigation included 25317 children and their parents from 1364 educational institutions. It has been about 10% of the population of Polish children born in the 2000 year. Information about the range of spontaneous and organized physical activity of the researched children was obtained on the basis of author's questions. They were comprised in a questionnaire for parents and they concerned the organization of motor activities (their intensity & frequency) in a free time. The whole material was verifying and statistically calculated.

**Results.** Data from our studies indicate that physical activity of pre-school children in Poland is under the healthy level. All day long more than 15% children do not move enough for their age. What is really worrying is that almost 80% 6-years-old boys and girls do not participate in any organized physical activity pose schools or nurseries.

**Conclusions.** Supporting children in their activity is very important from the point of view of their future.

**Key words:** 6-years-old children, physical activity, pre-school children, health.

### Introduction

As a result of the development of means of communication and the mechanization of housework and professional work a modern man is not as physically active as it was a few dozen or a few hundred years ago. There are more and more evidence that hypokinesia has adverse consequences in many areas of life including health, social relations (Geiß, Parhofer, Schwandt, 2001). The problem of low physical activity affects every age and occupation group, including children and young people. Competition for active leisure activities has become a variety of media (Jago, Baranowski, Baranowski et al., 2005; Cleland, Crawford, Baur et al., 2008). Especially for the youngest generation, a computer, television, electronic devices become more attractive than physical games and plays with peers (Król, Jasińska, Nowak-Starz, et al., 2010). This results in

long hours of immobility and being in the room instead of active spending free time in the fresh air. As a consequence, in many countries there is a dramatic increase in the fraction of children and adolescents with the problem of overweight and obesity (Kalies, Lenz, von Kries, 2002; Lioret, Marire, Volatier, Charles, 2007; O'Neill, McCarthy, Burke, Hannon, Kiely, Flynn, Gibney, 2007; de Jong, Visscher, HiraSing, Heymans, Seidell, Renders, 2013). This problem also applies to Poland, where between 1995 and 2004 by 5% increased the group of six-years-old children with overweight and obesity (Resiak, 2007). Currently in Poland, according to various studies, there are 15-18% of overweight children at the age of 5-18 and obesity 4-5% (Król, 2004; Kozieł, Szklarska, Bielicki, Malina, 2006; Oblacińska and Jodkowska, 2007; Jopkiewicz, Przychodni, Jopkiewicz, Krzystanek, 2011).

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Lack of exercise and physical activity during childhood carries many other consequences. Physical efficiency and endurance of young generation is reduced. The biggest changes concern the muscle strength and endurance tests of the body. Weakness of postural muscles leads to problems with maintaining good posture and favors the emergence of a variety of defects and deformities of movement apparatus. Dangerous trend appears to be not only in the increasing group of young people with a variety of locomotor defects, but more and more children has disorders in many areas of body posture.

Low activity is also associated with a very important aspect of life and functioning of children which is schooling. It has been shown that physical exercise is an important element stimulating a brain to active adaptation and prepare it for a better job (Castelli, Hillman, Buck, Erwin, 2007; Haapala, 2012). Moreover, it was also found that physical activity of children has beneficial effects on improvement of memory, cognitive or learning processes (Vaynman, Ying, Gomez-Pinilla, 2004; Hillman, Erickson, Kramer, 2008; Mashburn, 2008). This is very important for young children, especially beginning schooling. Good performance, not just manual, but of the entire body allows a child to acquire knowledge about the world and prepare for new challenges in school and beyond it. Characteristic for the first decade of human life the need for physical movement is a substrate to form habits and develop interest in physical activity. It is important to support a child in achieving his spontaneity, but also allow him, through a variety of activities, to develop a sporty fitness and motor skills (Timmons, Naylor, Pfeiffer, 2007). Spontaneous activity of the child gives him/her a chance to meet his/her own motor needs, interests, contacts with peers. In contrast, organized physical activity is designed to shape the habit of being active throughout their lives and equalizing movement deficits resulting from modern lifestyle. In the various regions and communities the proportions between these types of activities may be different. Comparing the situation in a given country or population reveals trends occurring in a particular region or over the next few years. The aim of this study was to analyze the level of spontaneous and organized physical activity of 6-year-old children living in Poland.

## Methods

The study material were the results of the studies conducted in the framework of the national project "A six-year-old in Poland. Diagnosis of the tested spheres of development". The project included diagnosis of physical, motor, mental, social and emotional development, health and family and school environment of six-year-old children. The research used data collected in the

second test sequence, ie September-October 2006. This series of tests covered about 10% of the population of children born in 2000 in Poland, attending 1,364 kindergartens or schools. Parents or guardians of all the children were asked to fill out a detailed questionnaire containing a series of questions concerning the tested spheres of development of six-year-olds. 25317 duly completed surveys were studied.

Information about the range of spontaneous and organized physical activity of the researched children was obtained on the basis of author's questions built according to J. Drabik's (1997) suggestions for children at pre-school age and first class of primary school. They were comprised in a questionnaire for parents and they concerned the organization of motor activities (their intensity & frequency) in free time. In order to examine the physical activity level of children during the day parents were asked to determine whether their child takes such effort that he/she is sweating, fast breathing, tired. There were three possible answers suggested, ie almost never, several times a day, "all the time".

In Polish educational system six-year-old children prepare to take primary education in the so-called zero class, which can be organized in preschool or school institution. Thus, this study included the division into these two types of educational institutions. 14155 respondents attended kindergarten, ie 55.91%, while 11162 attended school, ie 44.09% of the children. The analysis also included a place of living of the surveyed six-year-olds. Dichotomous division into the city and the countryside was applied. 14310 respondents lived in the city, ie, 56.52%, and 11007 in rural areas, ie 43.48% of boys and girls.

The collected material was subjected to statistical analysis. The variability of the differences between the compared populations was assessed using a nonparametric chi-square test.

## Results

Analyzing the level of physical activity of the test children first was evaluated spontaneous activity during the day. Parents generally declared that their children at least for a few minutes several times a day move intensely. Such an answer was given by more than 59% of the respondents. The lack of such activity during the day was observed in over 16% of children. It should be emphasized that it concerned more girls (18.9%) than boys (14.0%). Differences between the sexes were also marked with the answer "all the time the child is active". Definitely more often that activity concerned boys. The results of chi-square test assessing differences between gender in relation to intensive physical activity during the day proved to be statistically significant ( $\chi^2 = 150.04$ ,  $p < 0.0001$ ) (Table 1). These results seem to be very worrying due to the

mobility needs of children at this age. It should be expected that responses indicating very high activity of six- year-olds will prevail. However, only slightly more than 20% of girls and 26.6% of boys was characterized by physical activity that is appropriate for their age.

*Table 1. The frequency of intense physical activity during the day of boys and girls*

Next it was analyzed whether the place of living is associated with the level of activity of 6-year-old children (Fig.1). Disturbing trends were observed in relation to the rural environment. A much larger population of six-year-old children living in rural areas was not active during the day (18.8%) compared with their peers from the city (14.5%). In considering this issue separately for sex, it should be clearly noted that girls living in rural areas were characterized by the lowest activity during the day, because in as many as 20.9% of these, parents chose the answer "almost never" (chi-square = 27.40,  $p < 0.001$ ). Large differences also occurred when comparing the lowest level of physical activity of boys from the rural and urban environment, in favor of the respondents in the city (chi-square = 82.23,  $p < 0.001$ ).

*Figure 1. The frequency of intensive physical activity during the day of boys and girls by place of residence (city, village)*

Various educational institutions create a unique climate for functioning children in them. In kindergarten, due to the schedule during the day and adaptation of infrastructure facilities corresponding to the needs of children, it is believed that they provide more favorable environment for the growth and activity of children. School attended by the 6-year-olds, in most were less suited to the needs of younger children. Often having sports base, they do not make it available for six-year-olds and pupils of younger classes. Supporting natural movement needs of children through the organization of physical activities in educational institutions, their appropriate level, type and frequency, and the attitude and creativity of a teacher foster kneading in children the habit of physical activity in leisure time. Therefore, it was examined whether the type of the facility to which the tested children attended differentiated their activity during the day (Fig.2). These differences occurred to be statistically significant ( $\chi^2 = 74.18$ ,  $p < 0.001$ ). Among school children there was a much larger group of physically inactive (18.5%) than among preschoolers (14.7%).

*Figure 2. The frequency of intensive physical activity during the day of boys and girls by institution (kindergarten, school)*

Children in preschool and early school age are characterized by the need of movement. It is preferably satisfied by them in a spontaneous way - fun, games of movement. However, more often it is

emphasized that due to school activities and the use of various electronic media by children, their activity is far too small in relation to needs. Thus, an important supplement element of these deficiencies are additional organized sports activities. Parents of the respondents were asked whether their children attended and how often in organized sports activities. Over 80% of children did not have any organized physical activity per week (Table 3). Only slightly more than 1% of girls and boys at least 5 times a week participated in organized physical activities. It should be assumed that this was a group of children undertaking systematic sports training in their chosen discipline.

*Table 2. Frequency of organized physical activity during the week of boys and girls*

Organization of physical activity for children involves the need to have proper housing base and adequately trained staff of teachers, trainers and instructors. Not in every place such conditions can be assured. Hence, it was assumed that the place of residence will differentiate the possibility of taking an organized physical activity. This assumption has been confirmed, as the results of chi-square test for both the study group as a whole and in division by gender were statistically significant (for the tested children and place of residence  $\chi^2 = 932.13$ ,  $p < 0.0001$ ; for girls and place of residence  $\chi^2 = 470.38$ ,  $p < 0.0001$ ; for boys and place of residence  $\chi^2 = 464.79$ ,  $p < 0.0001$ ). Among children living in rural areas as much as 88.7% of them did not attend any physical activities outside the preschool or school institution. In cities, this percentage was lower and amounted to 74.8% of the respondents. In addition, children residing in the village twice less participate in physical activities (1-4 times per week) than their peers from the city (Fig. 3).

*Figure 3. Frequency of organized physical activity during the week of boys and girls by place of residence (city, village)*

Analyzed was also the frequency of taking up an organized physical activity during leisure time, depending on the type of institution (school, kindergarten) attended by the child. The results of chi-square test were statistically significant ( $\chi^2 = 445.30$ ,  $p < 0.0001$ ). Organized physical activity was more often taken up by children of kindergarten than school institutions (Fig. 4).

*Figure 4. Frequency of organized physical activity during the week of boys and girls by institution (kindergarten, school)*

Low physical activity during childhood is associated with a significant probability of occurrence of a number of health problems in the future. One of the ways to maintain an appropriate level of physical activity of the young generation are physical activities carried out within the framework of the curriculum in schools and kindergartens. They are becoming increasingly important due to the fact that in everyday life there

are fewer situations demanding considerable physical effort also from children. In addition, as noted above only a slight percentage of the population of 6-year-olds participate in organized physical activity outside school or kindergarten. A very big problem in schools, especially in middle school and high school are exemptions from physical education. It rarely happens in the junior class divisions, where parents decide on exemption from physical education. Most frequently they do so because of ill health of their children. The positive aspect observed in the present study is that most parents of both boys and girls declared rare release their children from physical activity in preschool or school (the result of chi-square test proved to be statistically insignificant  $\chi^2 = 0.14$ ) (Table 3).

*Table 3. Frequency of exemption from physical activities of boys and girls*

Parents living in urban and rural areas showed a similar attitude to releasing children from physical activities. In both environments, the responses were almost identical. The results of chi-square test proved to be statistically insignificant ( $\chi^2 = 4.0$ ) (Fig. 6).

*Figure 6. Frequency of exemptions from physical activity of boys and girls by place of residence (city, village)*

Statistically significant differences were found between the type of institution attended by the child and the frequency of exemptions from physical activities ( $\chi^2 = 13.53$ ,  $p < 0.01$ ). Children from kindergarten were less likely to be released from such activities than their peers attending school. This may be due to the fact that the school does not provide the children of the younger classes with the access to sports base, the gym, the same does not create the appropriate conditions for the implementation of such activities. Basically, physical education is organized at school corridors or in classrooms (Fig. 7).

*Figure 7. Frequency of exemptions from physical activity of boys and girls by institution (kindergarten, school)*

## Discussion

Controlling and supporting physical activity levels need to be talked about already for the youngest. As studies from different countries show its level in relation to the child population is insufficient. Changes in the level of physical activity can be considered in terms of the generation gap (Roth, Ruf, Obinger et al., 2010) and a generation in different age groups. The report on the lifestyles of young people in Europe developed by Brettschneider and Nul (2004) clearly indicates a steady decline in physical activity of children and adolescents with age, especially in girls. Subsequent generations of children and adolescents in Europe (Cleland, Crawford, Baur et

al., 2008; Labbrozzi, Robazza, Bertollo, Bucci, 2013; Lelonek, Jopkiewicz, 2013), but also in other regions of the world (Prochaska, Sallis, Long, 2001), spend less and less time on having fun and playing sports. As a result, their physical fitness is falling (Cieřla, Markowska, 2010; Roth, Ruf, Obinger et al., 2010), which is a very important indicator of health because it determines the morphological and physiological capabilities of the whole human body, not only the functioning of the locomotor system. The effect of this perspective on physical fitness is adoption of the popular concept of *Health-Related Fitness* (H-RF). Skinner and Oja, 1994, singled out in the framework of this concept (H-RF) components that affect health such as morphological, musculo-skeletal, motor, cardio-respiratory and metabolic ones, which can only be developed through physical activity.

The level of spontaneous and organized physical activity of Polish six-year-olds is clearly too low. According to the recommendation of the American College of Sports Medicine (2009), children should be active at least 3-4 times a week, preferably every day. In addition, it was recommended that effort went from moderate (physical activity that noticeably increases breathing, sweating and heart rate) to vigorous (physical activity that substantially increases breathing, sweating, heart rate) intensity. However, a high proportion of parents did not note such intensity of effort during the day (16%). In addition, a disturbing fact was a very small group of children who attend additional physical activities outside the preschool or school institution. Only 1% of six-year-olds participated 5 or more times a week in various forms of physical activity. It can be assumed that this is the fraction of children interested in activities of a sporting nature to a greater extent. This low activity of six-year-old children fills concern and forces to intense action to improve the situation. More and more institutions, global and communal recognize this problem.

World Health Organization Regional Office for Europe in work "Step to health. A European framework to promote physical activity for health" (2007) identified a number of problems that cause a reduction in physical activity in different social groups. Moreover, some recommendations were given how to improve this state. With regard to preschool and school children one point talks about a very important and yet simple solution. In order to motivate children to develop physical activity habits that will stay with them throughout their lives, physical education and physical activity in school and kindergarten should first of all be fun. This postulate seems to be very simple to implement, but a number of studies show that pupils evaluate physical education as unattractive. Negative attitudes to these activities increases with



age, and relate more to girls than boys (Starc, Strel, 2012; Labbrozzi, Robazza, Bertollo et al., 2013).

### Conclusions

Supporting children in their activity is very important from the point of view of their future. Physical activity has a positive influence on academic performance and self-esteem. In addition, if your child is active, he/she will continue such behavior in youth and subsequent periods of life.

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**Table 1.** The frequency of intense physical activity during the day of boys and girls

Activity during the day outside the institution		boys	girls	generally
almost never	n	1820	2323	4143
	%	14,0	18,9	16,4
a few times	n	7746	7274	15020
	%	59,5	59,2	59,3
all the time	n	3460	2694	6154
	%	26,6	21,9	24,3
generally	n	13026	12291	25317
	%	100,0	100,0	100,0

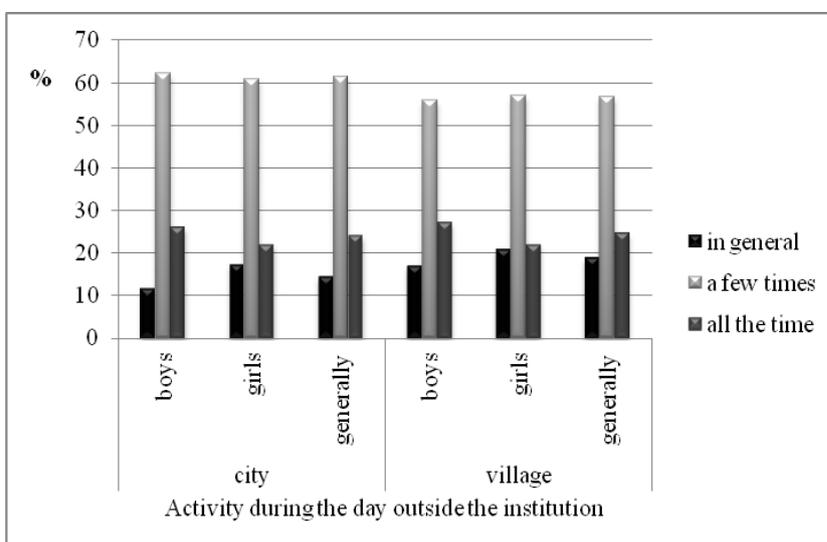


Figure 1. The frequency of intensive physical activity during the day of boys and girls by place of residence (city, village)

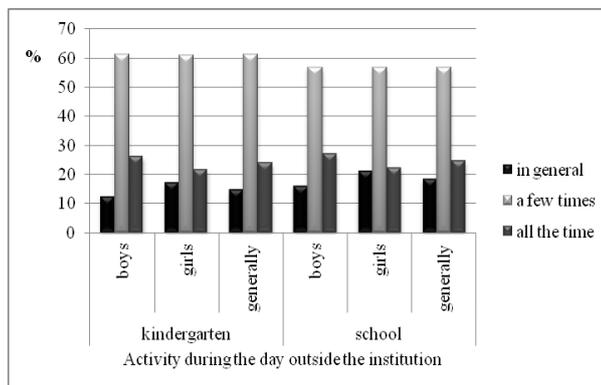


Figure 2. The frequency of intensive physical activity during the day of boys and girls by institution (kindergarten, school)

**Table 2.** Frequency of organized physical activity during the week of boys and girls

Activity during the week outside the institution		boys	girls	generally
in general	n	12049	11080	23129
	%	81,9	79,8	80,8
1-4 times	n	2478	2652	5130
	%	16,8	19,1	17,9
5 times or more	n	191	160	351
	%	1,3	1,2	1,2

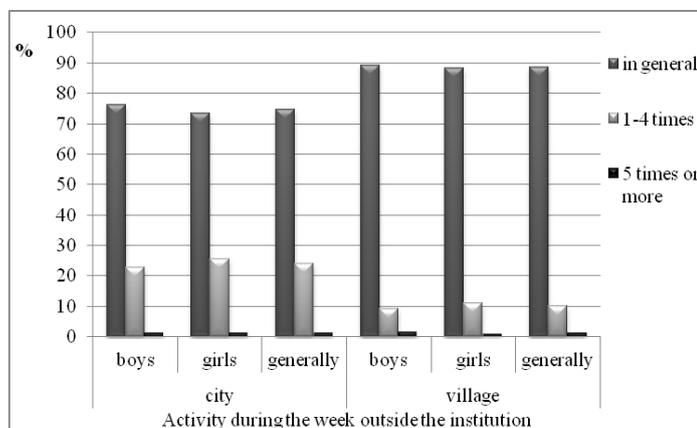


Figure 3. Frequency of organized physical activity during the week of boys and girls by place of residence (city, village)

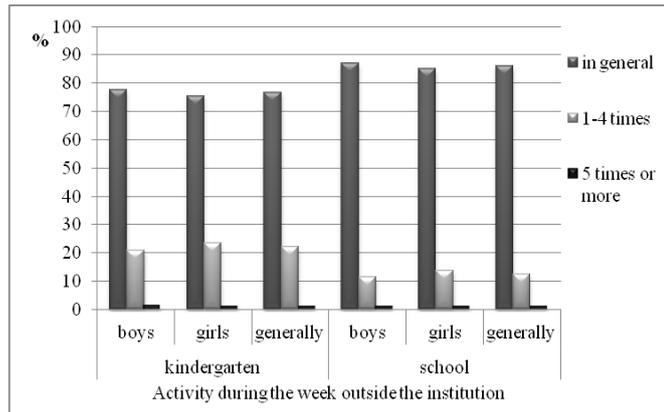


Figure 4. Frequency of organized physical activity during the week of boys and girls by institution (kindergarten, school)

**Table 3.** Frequency of exemption from physical activities of boys and girls

Exemptions from physical activities		boys	girls	generally
rarely	n	14177	13462	27639
	%	95,7	95,8	95,8
often	n	585	543	1128
	%	4,0	3,9	3,9
very often	n	46	43	89
	%	0,3	0,3	0,3

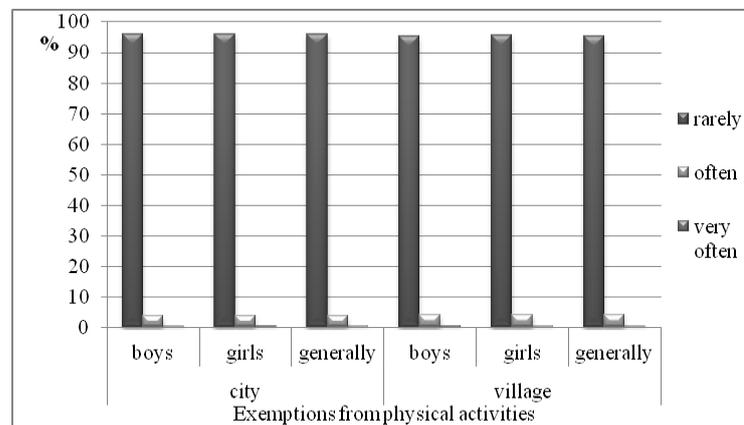


Figure 6. Frequency of exemptions from physical activity of boys and girls by place of residence (city, village)

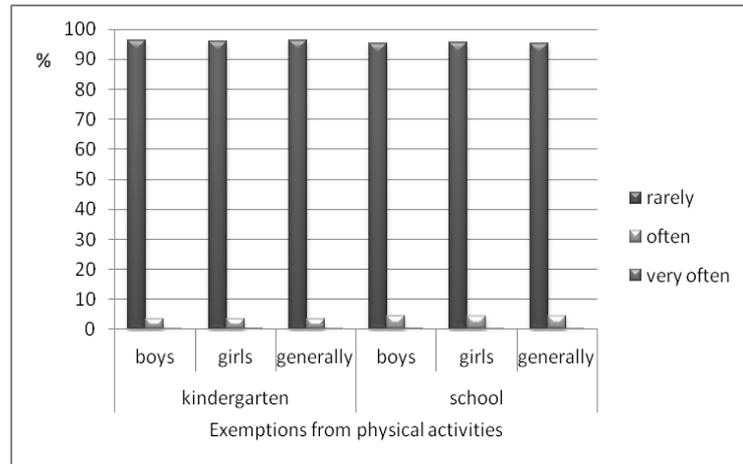


Figure 7. Frequency of exemptions from physical activity of boys and girls by institution (kindergarten, school)