

ANALYSIS OF PHYSICAL ACTIVITY IN PRESCHOOL CHILDREN FROM PIŁA. PART 2. MOTOR SKILLS, SPORTS EQUIPMENT AND PARENTS' ATTITUDE TOWARDS PHYSICAL ACTIVITY**

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Summary

Aim. The aim of this study was to analyse motor skills in preschoolers from Piła and to investigate sports equipment owned by the children as well as their parents' attitude towards physical activity.

Material and methods. Parents of 165 preschoolers from Piła filled in questionnaires on their children's motor skills, involvement of family members and other persons in teaching the children motor skills, sports equipment owned by the children and their own attitude towards physical activity, including parents' attitude towards their children's physical activity and parents' physical activity. Statistical analysis was performed by the IBM SPSS Statistics 21 computer programme.

Results. Gender had statistically significant influence on the percentages of children who had the skill of skating, rollerblading and skipping a rope, and who owned a skipping rope. Gender had also statistically significant influence on parents' answers to the question whether their children's physical activity at preschool was sufficient.

Conclusions. It seems that the low percentages of physically active parents along with the low percentages of parents who stated that their knowledge of the role of physical activity in child's development was sufficient may be one of the main causes of their children's low level of physical activity. Lack of the preschool staff's involvement in teaching the children motor skills is highly unfavourable. It is indispensable to work out, as soon as possible, an education programme for preschoolers' parents and preschool staff, as well as for the local authorities, focused on the possibilities of increasing preschool children's physical activity.

Key words: physical activity, preschool children, Piła, motor skills, sports equipment, parents' attitude towards physical activity

INTRODUCTION

Physical activity is of crucial importance to human health and well-being irrespective of age, especially to preventing obesity and other diet-related diseases. Therefore it is essential to be physically active from the early childhood (1-5). Children's involvement in physical activity depends on many factors. In the literature, the most important and much emphasised factors include the role of parents (6-8) and preschool teachers (6, 9), preschool facilities (10, 11), and even a playground density (12, 13), environmental factors (9, 14), neighbourhood (15), season and weather (10, 16), as well as the child's health status (17, 18). However, there are few studies which focused on preschool children's motor skills, sports equipment owned by the children and parents' attitudes towards physical activity (19-22). Investi-

gating these factors will be helpful for working out educational programmes aimed at increasing preschoolers' physical activity.

AIM

The aim of this study was to analyse motor skills in preschool children from Piła including involvement of family members and other persons in teaching the children motor skills, as well as to investigate sports equipment owned by the children and their parents' attitude towards physical activity.

MATERIAL AND METHODS

Parents of 165 preschool children, 79 girls and 86 boys who attended preschools in Piła, filled in questionnaires on their children's motor skills, involvement

**This study was financed by the Polish Ministry of Science and Higher Education from the resources for financing research in the years 2010-2014 as a research project N N404 140437.

of family members and other persons in teaching the children motor skills, sports equipment owned by the children and their own attitude towards physical activity, including parents' attitude towards their children's physical activity and parents' physical activity. The questions on children's motor skills, involvement of family members and other persons in teaching the children motor skills, sports equipment owned by the children and parents' attitude towards their children's physical activity were included in our previous articles (19-22). Characteristics of the studied children from Piła were presented in the first part of this article (23).

This study was approved by the Bioethics Committee of the Poznan University of Medical Sciences. Written informed consent was obtained from all children's parents. The study was carried out in September/October 2010.

Statistical analysis was performed by the IBM SPSS Statistics 21 computer programme. The studied population was divided according to gender.

For all the qualitative variables, statistical significance was determined using Pearson's chi-square test, except for the variables with 2 x 2 tables with an expected frequency of less than five in at least one subgroup for at least one answer, in which case Yates' corrected chi-square test or Fisher's exact test was used. The level of significance was set at $P \leq 0.05$.

To investigate the relation between owning sports equipment and the studied children's motor skills, Spearman's correlation coefficients were calculated. The level of significance was set at $P \leq 0.05$.

RESULTS

Motor skills

Table 1 shows motor skills of the studied preschool children from Piła according to gender and table 2 shows involvement of family members and other persons in teaching the studied children motor skills. Gender had statistically significant influence on the percentages of children who had the skill of skating,

rollerblading and skipping a rope. All of these skills were possessed by higher percentages of girls than boys: 11.4% of girls vs 2.3% of boys in case of skating, 21.5% of girls vs 10.5% of boys in case of rollerblading, and 49.4% of girls vs 33.7% of boys in case of skipping a rope.

Sports equipment and motor skills

Table 3 presents sports equipment owned by the studied preschool children from Piła according to gender. Gender had statistically significant influence on the percentages of children who owned a skipping rope. A higher percentage of girls, 81.0%, owned a skipping rope compared to boys, 45.3%.

Table 4 shows Spearman's correlation coefficients between owning sports equipment and the studied children's motor skills according to gender. In the whole population, irrespective of gender, five statistically significant correlation coefficients were found: between owning skates, skis, rollerblades, bicycle and skipping rope, and motor skills which require using this equipment. Both in girls and boys, three correlation coefficients were statistically significant: between owning skates, skis and rollerblades, and motor skills which require using this equipment. Statistically significant correlation coefficient between owning a skipping rope and skipping skill was found only in girls. The highest correlation coefficients were those between owning rollerblades and rollerblading skill in girls, 0.73, and in the whole population, 0.70.

Parents' attitude towards physical activity

Table 5 presents parents' attitude towards their children's physical activity, and table 6 – parents' physical activity according to gender of the studied preschool children from Piła. Gender had statistically significant influence on parents' answers to the question about their children's physical activity at preschool. Statistically significantly higher percentage of girls' parents compared to boys' parents, 54.4% vs 34.9%, assessed their child's physical activity at preschool as sufficient.

Table 1. The studied children's motor skills [%].

No.	Motor skills	Girls (n = 79)	Boys (n = 86)	All children (n = 165)	P
1.	Skating	11.4	2.3	6.7	0.020
2.	Skiing	3.8	3.5	3.6	NS
3.	Rollerblading	21.5	10.5	15.8	0.052
4.	Riding a bicycle	43.0	57.6	50.6	NS
5.	Swimming	27.8	22.4	25.0	NS
6.	Skipping a rope	49.4	33.7	41.2	0.041

P – significance; NS – not significant ($P > 0.05$)

Table 2. Involvement of family members and other persons in teaching the studied children motor skills [%].

No.	Motor skills	Who taught the child	Girls (n = 79)	Boys (n = 86)	All children (n = 165)	P
1.	Skating	Parents	77.8	100.0	81.8	NS
		Grandparents	11.1	0.0	9.1	
		Other persons	11.1	0.0	9.1	
2.	Skiing	Parents	66.7	33.3	50.0	NS
		Other persons	33.3	66.7	50.0	
3.	Rollerblading	Parents	82.4	66.7	76.9	NS
		Elder siblings	0.0	22.2	7.7	
		Other persons	17.6	11.1	15.4	
4.	Riding a bicycle	Parents	82.4	68.8	74.4	NS
		Grandparents	5.9	12.5	9.8	
		Elder siblings	2.9	2.1	2.4	
		Other persons	8.8	16.7	13.4	
5.	Swimming	Parents	63.6	57.9	61.0	NS
		Grandparents	0.0	15.8	7.3	
		Elder siblings	9.1	0.0	4.9	
		Other persons	27.3	26.3	26.8	
6.	Skipping a rope	Parents	64.7	65.5	65.1	NS
		Grandparents	0.0	6.9	3.2	
		Elder siblings	11.8	10.3	11.1	
		Preschool teacher	0.0	6.9	3.2	
		Other persons	23.5	10.3	17.5	

P – significance; NS – not significant ($P > 0.05$)

Table 3. Sports equipment owned by the studied preschool children [%].

No.	Equipment	Girls (n = 79)	Boys (n = 86)	All children (n = 165)	P
1.	Skates	10.1	8.1	9.1	NS
2.	Skis	3.8	4.7	4.2	NS
3.	Ball	96.2	100.0	98.2	NS
4.	Rollerblades	26.6	20.9	23.6	NS
5.	Bicycle	96.2	98.8	97.6	NS
6.	Sledge	94.9	95.3	95.2	NS
7.	Skipping rope	81.0	45.3	62.4	< 0.001
8.	Roller skates	16.5	8.1	12.1	NS
9.	Scooter	77.2	68.6	72.7	NS
10.	Trampoline	2.5	3.5	3.0	NS
11.	Badminton	0.0	1.2	0.6	NS
12.	Hula hoop	3.8	0.0	1.8	NS
13.	Skateboard	1.3	5.8	3.6	NS
14.	Other equipment	8.9	8.1	8.5	NS

P – significance; NS – not significant ($P > 0.05$)

Table 4. Spearman's correlation coefficients between owning sports equipment and the studied children's motor skills.

No.	Correlated variables	Girls (n = 79)		Boys (n = 86)		All children (n = 165)	
		r	P	r	P	r	P
1.	Owning skates and skating skill	0.67	< 0.001	0.24	0.029	0.51	< 0.001
2.	Owning skis and skiing skill	0.65	< 0.001	0.26	0.016	0.44	< 0.001
3.	Owning rollerblades and rollerblading skill	0.73	< 0.001	0.66	< 0.001	0.70	< 0.001
4.	Owning a bicycle and riding a bicycle skill	0.17	0.128	0.13	0.246	0.16	0.041
5.	Owning a skipping rope and skipping skill	0.28	0.011	0.19	0.079	0.27	< 0.001

r – correlation coefficient; P – significance; NS – not significant ($P > 0.05$)

Table 5. Parents' attitude towards their children's physical activity [%].

No.	Parameter	Girls (n = 79)	Boys (n = 86)	All children (n = 165)	P
1.	My child's physical activity at preschool is sufficient	54.4	34.9	44.2	0.008
2.	My child's physical activity at home is sufficient	40.5	37.2	38.8	NS
3.	Preschool child should attend swimming pool	88.6	83.7	86.1	NS
4.	My knowledge of the role of physical activity in child's development is sufficient	39.2	41.9	40.6	NS
5.	I broaden my knowledge of the role of physical activity in child's development	50.6	52.3	51.5	NS

P – significance; NS – not significant ($P > 0.05$)

DISCUSSION

Motor skills

It is very unfavourable that the studied preschoolers from Piła demonstrated poorer range of motor skills than their previously studied peers from various regions of Poland (19, 20, 22, 24, 25). The percentages of the whole population of the studied preschoolers who could ride a bicycle, rollerblade, ski, swim and skip a rope were lower than the percentages of their peers from the previously studied preschools (9, 20, 22, 24, 25). The percentage of the studied preschoolers who could skate was a little higher than the percentage of children from preschools in Darłowo (22) but lower than the percentages of children from other regions of Poland (19-21). It is worth noting that the percentage of the studied girls from preschools in Piła who could ride a bicycle and skip a rope was as many as twice lower than the percentages of girls from the previously studied preschools (19, 20, 22, 24, 25) and the percentage of the studied boys who could ride a bicycle was about 30% lower than the percentages of their male peers from other preschools (19, 20, 22, 24, 25). While the lack of skills which require using specialist, expensive equipment may be explained by worse economic status of the family, it is

hard to find an explanation why such a low percentage of the studied children acquired the skill of skipping a rope if the rope may be even a washing line. It also should be noted that although the percentage of the studied children from Piła who owned a bicycle was only a little lower than the percentage of children from Poznań (20), Darłowo (22) and Nowy Sącz and the vicinity (19), only a half of the studied preschoolers could ride a bicycle. It seems that the reason for this situation may be the fact that parents and preschool staff ignored the role of physical activity in children's development and that they were unaware of the harm they did to the children.

Similarly to our previous studies (19, 20, 22), a higher percentage of the studied girls compared to boys from the preschools in Piła could rollerblade, skate and skip a rope, while a higher percentage of boys could ride a bicycle. It seems that in our society, there is a strong belief that some forms of physical activity are suitable for girls, while other are suitable for boys. Teaching children selected forms of physical activity depending on gender is highly unfavourable for the future understanding between the two genders and for putting into practice the concept of taking common physical activities within the family. This problem concerns children and youths of various age and from various parts of the world (26-30).

Table 6. Parents' physical activity [%].

No.	Parameter	Girls' parents (n = 79)	Boys' parents (n = 86)	All children's parents (n = 165)	P	
1.	Physically active mothers	47.4	44.2	45.7	NS	
2.	Forms of physical activity undertaken by mothers*	Riding a bicycle	30.6	41.0	36.0	NS
		Swimming	27.8	30.8	29.3	NS
		Exercise	13.9	17.9	16.0	NS
		Aerobics	19.4	12.8	16.0	NS
		Walking	16.7	15.4	16.0	NS
		Running	8.3	7.7	8.0	NS
		Step aerobics	0.0	2.6	1.3	NS
		Rollerblading	5.4	5.3	5.3	NS
	Other forms	30.6	30.8	30.7	NS	
3.	Physically active fathers	54.8	41.7	47.8	NS	
4.	Forms of physical activity undertaken by fathers*	Riding a bicycle	40.0	34.3	37.3	NS
		Swimming	20.0	34.3	26.7	NS
		Walking	12.5	2.9	8.0	NS
		Weight training	27.5	22.9	25.3	NS
		Running	27.5	11.4	20.0	NS
		Football	12.5	22.9	17.3	NS
		Tennis	2.5	5.7	4.0	NS
			Other forms	20.0	34.3	26.7

*Calculated as the percentage of parents who declared that they were physically active.

P – significance; NS – not significant ($P > 0.05$).

Mainly parents of the studied preschoolers taught them motor skills, similarly to the parents of children from Nowy Sącz and the vicinity (19), Poznań (20) and Darłowo (22). The involvement of grandparents and siblings in teaching the studied children motor skills was very little, just like in case of grandparents and siblings of children from the previously studied preschools (19, 20, 22). Preschool staff involved only in teaching the studied preschoolers skipping a rope, however, it was only in case of a very small percentage of children. Also in the previously studied preschools from other regions of Poland (19-22), preschool staff seldom involved in teaching the children motor skills. Such a lack of the preschool staff's involvement is very unfavourable because preschool teachers play an important role in the education of children (31-34). To reverse this adverse tendency, preschool staff should be educated about the role of developing motor skills in psychomotor development of the children and in establishing the habit of being physically active from the

early childhood. These issues should be included in the curricula for preschool teachers.

Sports equipment and motor skills

The percentages of the studied preschoolers who owned skates, rollerblades, hula hoop, badminton and skipping ropes were the lowest in comparison to their previously studied peers from other regions of Poland (19, 20, 22), while the percentages of the studied preschoolers who owned scooters, trampolines, roller skates and skateboards were the highest. In the studied preschoolers, similarly to children from other regions of Poland (19, 20, 22), higher percentages of girls owned skates, rollerblades and skipping ropes, whereas higher percentages of boys owned balls, bicycles and skateboards. Selecting the sports equipment for the children depending on gender is not a good habit. There is also no justification for such behaviour which limits acquiring motor skills by the children who would probably learn more if they could use any equipment. It also creates unnecessary barriers

between the two genders and will make it difficult to undertake common physical activities in the family. Therefore, there is a need to work out and launch as soon as possible a national education programme on physical activity for children, youths and adults.

Statistically significant Spearman's correlation coefficients between owning skates and rollerblades, and motor skills which require using this equipment calculated in the studied girls from Piła were higher than the same statistically significant coefficients calculated in girls from preschools in Poznań (20) and Darłowo (22). Statistically significant Spearman's correlation coefficient between owning skis and skiing skill calculated in the studied girls from Piła was lower than the same coefficient calculated in girls from preschools in Poznań (20) but higher than the coefficient calculated in girls from preschools in Darłowo (22). Statistically significant Spearman's correlation coefficient between owning a skipping rope and skipping skill calculated in the studied girls was lower than the same statistically significant coefficient calculated in preschool girls from Darłowo (22). In preschool girls from Poznań (20), this correlation coefficient was not statistically significant.

Statistically significant Spearman's correlation coefficient between owning skates and skating skill calculated in the studied boys from Piła was lower than the same statistically significant coefficient calculated in preschool boys from Poznań (20) and Darłowo (22), whereas the correlation coefficient between owning rollerblades and rollerblading skill, also statistically significant, was higher. Statistically significant Spearman's correlation coefficient between owning skis and skiing skill calculated in the studied boys was lower than the same statistically significant coefficient calculated in preschool boys from Poznań (20). In preschool boys from Darłowo (22), this correlation coefficient was not statistically significant.

Statistically significant Spearman's correlation coefficient between owning rollerblades and rollerblading skill calculated in the whole population of the studied preschoolers from Piła was lower only from the statistically significant coefficient calculated in the population of preschoolers from Nowy Sącz and the vicinity (19). Statistically significant Spearman's correlation coefficient between owning skates and skating skill calculated in the whole population of the studied preschoolers was higher only from the same coefficient calculated in the population of preschoolers from Poznań (20), while the statistically significant correlation coefficient between owning skis and skiing skill was higher only from the same coefficient calculated in the population of preschoolers from Darłowo (22). Statistically significant Spearman's correlation coefficients between owning a bicycle and a skipping rope, and motor skills which require using this equipment calculated in the studied preschoolers from Piła were lower than the same coefficients calculated in the preschoolers from other regions of Poland (19, 20, 22).

Parents' attitude towards physical activity

In comparison to the answers of parents of the previously studied preschoolers, both girls and boys (19, 20, 22), the lowest percentage of the studied preschoolers' parents, both girls' and boys', claimed that their knowledge of the role of physical activity in child's development was sufficient and that their child's physical activity at home was sufficient. In comparison to the answers of parents of the previously studied boys (19, 20, 22), the lowest percentage of the studied boys' parents stated that preschool child should attend swimming pool and that their son's physical activity at preschool was sufficient. The percentage of the studied boys' parents from preschools in Piła who broadened their knowledge of the role of physical activity in child's development was higher only than the percentage of parents of boys from Darłowo (22), whereas the percentage of the studied girls' parents was higher only from the percentage of parents of girls from Nowy Sącz and the vicinity (19). The percentage of the studied girls' parents who knew that preschool child should attend swimming pool was higher only than the percentage of parents of preschool girls from Darłowo (22), and the percentage of those who assessed their daughter's physical activity at home as sufficient was lower only than the percentage of parents of preschool girls from Nowy Sącz and the vicinity (19). The self-criticism of the studied preschoolers' parents from Piła about their own knowledge of the role of physical activity in child's development is very favourable. Special books on this subject, addressed especially to preschoolers' parents, should be published.

The percentages of physically active mothers and fathers of the studied preschoolers from Piła were lower than the percentages of physically active mothers and fathers of children from preschools in Darłowo (22). It seems that low level of physical activity reported by the studied preschoolers' parents along with their low level of knowledge of the role of physical activity in child's development may be one of the main causes of their children's low level of physical activity. The relationship between parent and child physical activity was reported by Craig et al. (35).

CONCLUSIONS

1. It seems that the low percentages of physically active parents along with the low percentages of parents who stated that their knowledge of the role of physical activity in child's development was sufficient may be one of the main causes of their children's low level of physical activity.

2. Lack of the preschool staff's involvement in teaching the children motor skills is highly unfavourable.

3. It is indispensable to work out, as soon as possible, an education programme for preschoolers' parents and preschool staff, as well as for the local authorities, focused on the possibilities of increasing preschool children's physical activity. □

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Received: 20.12.2013

Accepted: 27.12.2014

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