



THE RELATIONSHIP BETWEEN BOYS AND GIRLS, INVOLVEMENT IN PHYSICAL EXERCISE AND MOTOR ABILITIES IN 6-YEAR OLD CHILDREN

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Abstract

The aim of this study was to determine the relationship between boys and girls, and involvement in physical exercise regard to the development of motor abilities in preschool children. The sample was made of 64 six year old preschool children, precisely 36 boys and 28 girls. The sample was randomly selected from three kindergartens in Zagreb. There were 40 respondents who are, at the time of measurement, involved in an physical exercise program for 1 year and 24 participants who are involved in physical exercise in kindergarten for 2 years. For establishing the motor efficiency, a set of six motor tests was used. In accordance with the aim of this research the regression analyses was conducted. From the result of this study it can be noted that there is statistically significant relations between boys and explosive strength as well as between girls and balance. Regarding to motor efficiency and amount of physical exercise the statistically significant relations were found in coordination. It can be concluded that from early childhood, there is a different level of development of certain motor abilities in boys as in girls. Also, the children who participate longer in physical exercise have better results in the test polygon backwards.

1. Introduction

Motor skills are responsible for the efficiency of human movement. They can not be described only one general dimension, but for describing human motion capabilities it needed to be divided (Gredelj, Metikoš, Hošek, & Momirović, 1975).

Numerous studies have established the existence of a number of different basic motor abilities. Each motor ability is covered by the mechanism of the central nervous system that is managed, and are less or more associated with other human abilities (Kurelić, Momirović, Mraković, & Šturm, 1979). Motor abilities are not important only for themselves but also for the development of other characteristics and abilities (Malina, 2004).

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If the motor abilities do not develop to the level that the objective can be achieved given the genetic predisposition, it is very likely that such an individual will not be able to efficiently and easily perform a variety of everyday tasks, nor will such a state encourage the development of other qualities and abilities with which the motor abilities are related (Sanders, 2002).

From earliest childhood should be given the greatest possible attention to the development of all these motor abilities that will positively impact the overall development and health (Gallahue & Ozmun, 1998).

Besides to the study of physical exercise from most earlier age (Milanese, Bortolami, Bertucco, Verlato & Zancanaro, 2010; Ward, Vaughn, Mcwilliams & Hales, 2010), many researchers have dealt with establishing relations in motor abilities of preschool children according to gender (Bala, 2003; Ikeda & Aoyagi, 2009; Venetsanou & Kambas, 2011; Pahlevanian & Ahmadizadeh, 2014). In their research indicate that boys pronounced explosive strenght and precision, while girls scored better in tests of balance and flexibility.

The aim of this study was to determine the relationship between boys and girls, and involvement in physical exercise regard to the development of motor abilities.

2. Material and methods

According to the aim of this research, the subject was randomly composed from a population of 6-year old children from three Kindergartens in city of Zagreb. The sample was made of 64 pre-schoolers, precisely 36 boys and 28 girls. There were 40 respondents who are, at the tame of measurement, involved in a physical exercise program for 1 year and 24 participants who are involved in physical exercise in kindergarten for 2 years. The motor abilities were estimated according to battery of six motor tests: polygon backward (PBW) for establish coordination, sit and reach (SAR) for flexibility, side steps (SST) for agility, standing long jump (SLJ) for explosive strength, arm plate tapping (APT) for frequency of movement and standing with one leg on the cube (SOL) for balancing. All tests were performed in standard conditions, using standard apparatuses and under the supervision of the authors of this paper. All obtained results were calculated by statistic package Statistics for Windows 12. The variables were also gender and amount of physical exercise. For determining the relationship between boys and girls, and involvement in physical exercise regard to the development of motor abilities in preschool children the regression analyses was used. All found relationships between selected variables and groups of subjects are statistically significant at $p < 0.05$.

3. Results and Discussions

From the results of descriptive statistics of measured test for preschool boys and girls it can be seen that boys have better results in polygon backward (PBW) and standing long jump (SLJ), while the girls produce superior outcome in tests sit and reach (SAR), side steps (SST), arm plate taping (APT) and standing with one leg on the cube (SOL) (Table 1.).

Table 1. Descriptive statistic and regression analyses for boys and girls regard to development of motor abilities

Significant of regression model	F – value (6,57)=4,3422 p<,00112		
Motor performance Multiple R = 0,43	Boys (n=36)	Girls (n=28)	Standardise Beta regression
PBW	16,05 ± 4,95	16,76 ± 4,98	0,073
SAR	-2,15 ± 5,98	-5,37 ± 6,07	-0,177
SLJ	95,31 ± 20,16	84,43 ± 13,24	-0,431*
SST	8,21 ± 3,17	8,12 ± 1,54	0,058
APT	12,69 ± 1,90	13,30 ± 2,34	0,232
SOL	7,70 ± 6,88	14,10 ± 11,06	0,305*

* = marked p-value statistically significant at $p \leq 0,05$

The obtained results of regression analyses for boys and girls, regard to development of their motor abilities, shows that there is a statistical significant relations between them in tests standing long jump (SLJ) and standing with one leg on the cube (SOL) (Table1.).

Table 2. The regression analyses for involvement in physical exercise regard to development of motor abilities

Significant of regression models	F – value (6,57)=1,3354 p<, 25665	
Motor performance Multiple R = 0,40	Standardise Beta regression coefficient	Standardise Error of Beta regression coefficient
PBW	-0,317*	0,137*
SAR	-0,049	0,130
SLJ	-0,087	0,134
SST	0,089	0,137
APT	-0,164	0,155
SOL	0,205	0,135

* = marked p-value statistically significant at $p \leq 0,05$

While the conducted results of regression analyses for determining the relations between groups who are involved in physical exercise for one or two years, regard to development of their motor abilities, indicate that there is a statistical significant relations between them in test polygon backward (PBW).

From the obtained results of this research, it can be discussed that gender is significant factor in establishing motor efficiency of children at preschool age. The 6 yare old boys are statistically significant enhanced than 6 yare old girls in test standing long jump (SLJ) while the girls are better in test standing with one leg on the cube (SOL). On the base of this founding, it can be stated that in this age existed a significant relations between children according to their gender in explosive strength and balance. The similar results were established in study of Venetsanou & Kambas (2011) who examine the effect of age and gender on balance skills in preschool children. From the results of provided analysis the statistically significant gender differences were found in the subtest score and on six of the items in favour of a girl. Also, Pahlevanian & Ahmadizadeh (2014) compare motor skills between 51 preschool girls and 40 preschool boys at the age of six. The results of current study showed significant difference between boys and girls in throwing skills, objects balance, jumping skills, speed and hands fundamental movement skills, and coordination. They concluded that it is necessary to train motor abilities and skills in preschool children considering gender.

Furthermore, from the gained results in this study, it can be determined that in this sample occurred a significant relations between children who are involved in physical exercise program in kindergarten for one year and children who exercise for two years in coordination. This result indicates that there was a certain influence of physical exercise program in kindergarten on the participant's motor abilities in preschool period. In the research of Williams, Pfeiffer, O'Neill, Dowda, McIver, Brown, & Pate (2008) the purpose was also to examine the relationship between motor skill performance and physical activity in preschool children. They concluded that children with poorer motor skill performance were less active than children with better-developed motor skills.

4. Conclusions

For the purpose of this study the relationship between boys and girls, and involvement in physical exercise, regard to the development of motor abilities, were analysed. On the base of results of provided analyses it can be concluded that the 6 yare old boys are significant greater than 6 yare old girls in test for assessing explosive strength (SLJ), while the girls are superior in test for assessing balance (SOL). This founding leads to conclusion that gender is significant factor in establishing motor efficiency of children at preschool age, as well as that relationship between motor abilities and physical exercise could be important to the health of children and encourage children to engage in activities that promote motor skill performance.

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