ORIGINAL ARTICLE

Socio-economic characteristics of families and physical activity of children

Zoran Milosevic[1]• Nebojsa Maksimovic[1] • Ivana Milovanovic[1] • Radenko Matic[1] ✉ • Damjan Jaksic[1]• Jovan Vukovic[1]

Abstract

This study presents the results of empirical research conducted with the aim of analyzing differences in the physical activity of children in relation to the socio-economic characteristics of their families. The research was conducted by applying a questionnaire distributed to pupils aged 11-12 years, who live in the city of Novi Sad (the city and the village of Rumenka, Veternik, Kac, Bukovac, Futog). Bearing in mind that the work is a part of a broader research, the authors' attention was focused on the objective, and the evaluation of the respondents on the socio-economic status of the family, as well as differences in physical activity among boys and girls, and children who live in urban or rural setting. As dominant in this study stands out the finding of the author that the socioeconomic characteristics of families significantly affect the intensity, form and quality of physical activity of children. Since such a finding puts children living in families with low socioeconomic status into a disadvantaged position, the authors believe that with the findings of this and compatible researches it is needed to familiarize with the wider academic community, in order to include other social institutions in the process of affirmation of physical activity as an important lifestyle quality in children and youth.

Keywords Socio-economic characteristics • Children • Family • Physical activity

Introduction

Socio-economic characteristics, and the inequalities within them, are among the current topics in academic research focused on the development of children and youth (Mollborn, Lawrence, James-Hawkins, & Fomby, 2013). The social sciences continuously conduct research aimed at discovering as clear indicators of genetically inherited and even more intensely socially conditioned factors as possible, that affect the overall cognitive, socio-emotional and physical development of the youngest part of the population. In this regard, this study presents an empirical annex to the mentioned set of research, given the focus of authors' attention on the relation of some socio-economic characteristics of the family and physical activity of schoolchildren in the city of Novi Sad.

Insight into the published academic papers indicates the actuality of topics and diversity of directions in which the authors perceive the issue of physical activity of children and more concrete relation of socio-economic status of families on one hand and anthropometric features, motor behavior and intellectual ability on the other. In these studies (Strauss, Rodzilsky, Burack, & Colin, 2001; Scheerder, Vanreusel, Taks, & Renson, 2005; Brodersen, Steptoe, Boniface, & Wardle, 2007; Maksimovic, Matic, & Obradovic, 2009; Matic, Kuljic, & Maksimovic, 2010; De Cocker et al., 2012; Klein, Fröhlich, Pieter, & Emrich, 2016), among other things, we find some key factors that can influence the physical activity of children. It is

✉ radenkomatic@uns.ac.rs

[1] University of Novi Sad, Faculty of Sport and Physical Education

the individual factors, family (that is appropriate family support), peers (adequate support), school (education), local community (low or high economic status).

The family as the basic social community, and the nearest environment in which children develop is crucial for the overall development of children, and therefore the results in the field of physical activity (Mayer, 2002; Giulianotti 2008). As children often learn by observing the behavior of people in their immediate environment, not surprising are the observations that the children of parents who have already achieved results in sport are themselves physically active and successful in this area (Giulianotti, 2008). Contrary to such families, there are also those where a parent due to various reasons, is not pointed to the importance of practicing physical activity, resulting in a gradual loss of children's interest in sport (Matic, Kuljic, & Maksimovic, 2010).

Peer influence is also important, and in adolescence certainly primary for general development, including physical activity of children (Rowland, 1999; Sallis, Prochaska, & Taylor, 2000). Finally, institutional support through activities at school or at the level of clubs in local governments is the last round of incentives of children to physical activity by the wider community. However, recently, among these factors socioeconomic status of the family has clearly separated as dominant. In the Serbian society, the reason for such situation is the general pauperization of the population, decades-long influence of which is visible in all areas of social life. As physical activity is not among the existential human needs, we can assume that in families of lower socioeconomic status from the perspective of parents, it does not occupy the primary place. On the other hand, the measures taken by parents directly affect the intensity and quality of physical activity, and long term general psycho-physical development of children.

With this in mind, our attention in this study is focused on the socio-economic context as a factor of influence on physical activity of schoolchildren in the city of Novi Sad and the surrounding places. More specifically, the aim of the research is to analyze the differences in the physical activity of children in relation to the socio-economic characteristics of their families.

Method

The sample of respondents in the research included 467 boys and 464 girls (N=931) aged 11-12 years (5th grade pupils of primary schools), of which 48.5% of respondents come from villages (Rumenka, Veternik, Kac , Bukovac, Futog) and 51.5% from the city of Novi Sad.

Evaluation of physical activity entailed the scale format from 0 to 7, depending on the frequency of the respondent's doing of varying intensity of physical activity on a weekly basis (walking, moderate (not walking) and intense physical activity).

Socio-economic characteristics were evaluated based on the issues related to one aspect of socio-economic status, that is the economic well-being of families, which indirectly reflects families' income. This segment of the research included the following questions: 1) “Does your family own a car or a van?”, 2) “Do you have your own room?” 3) “How many computers are in possession of your family?” 4) “How many bathrooms do you have at home?” 5) “Does your family own a dishwasher?” and 6) “How many times did you and your family travel on vacation outside of Serbia last year?” Summarizing the obtained results, all respondents were classified into 3 formed categories of socioeconomic status: low (0-4), intermediate (5-9) and high (10 and over). These results were supplemented by respondents' own assessment of families' wealth. Question 1 implied a scale of responses: 0-no, 1-yes, 1 vehicle, 2-yes, two or more vehicles. Questions 2 and 5 presented dichotomous variables (0-no, 1-yes), while questions 3, 4 and 6 implied the scale format with the following answers: 1) none, 2) one, 3) two, or 4) more than two.

The statistical data analysis of differences among the respondents belonging to different categories of socioeconomic status used Kruskal-Wallis and Man-Whitney tests.

Results and Discussion

The descriptive statistics in Table 1 show the following representation of respondents defined by socio-economic categories: middle (65.2%), high (24.6%), and low (10.2%) socio-economic status.

Table 1. Socio-economic characteristics of respondents

Variable	N	%
Socio-economic category		
Low status	94	10.2
Middle status	601	65.2
High status	227	24.6
How well-off/wealthy is the family?		
Not at all	3	0.3
Not really	45	4.8
Average	411	43.8
Really	323	34.4
Very	156	16.6

Weekly physical activity (freq.)	Walking (% of N)	Moderate physical activity (% of N)	Intensive physical activity (% of N)
0	0.1	0.3	1.2
1	2.2	2.8	3.7
2	3.1	13.7	15.1
3	3.6	31.2	41.0
4	4.5	12.4	15.9
5	19.5	15.0	12.8
6	8.6	6.8	4.6
7	58.5	17.8	5.6

However, it is interesting that the estimation of wealth of the family of the respondents showed slightly different results: the low status (5.1% answers - not at all and not really), middle (43.8%, answer - average) and high (51%, answers - really, very), which indicates that respondents consider the socio-economic status of their families to a certain extent higher than it is objectively observed according to the socio-economic parameters. This result can be attributed to the comparison of the socio-economic status of their families with the families of children from the immediate environment, which is a logical aspect of this kind of evaluation in the age category of the respondents.

The next step was a comparative statistical analysis of the data, which was started by analyzing the differences in the levels of physical activity in relation to gender, and is presented in Table 2.

Table 2. Analysis of the differences in the levels of physical activity by gender of the respondents

Variable	Mean Rank	
	Boys	Girls
Walking	445.08	462.98
Moderate physical activity	448.52	452.51
Intensive physical activity	388.40**	338.81

** < 0.01 - Man-Whitney test

The presented results suggest that gender differences in doing intensive forms of physical activity are in favor of the boys. These results correspond to the results of previously completed studies (Alexandre, Obert, Bonnet, & Courteix, 2003; Djordjic, 2006; Djordjic & Krneta, 2007; Djordjic & Matic, 2008), which indicate the increased willingness of parents of preschool and early-school ages to encourage children to engage in physical activity. There is also more intense stimulation of boys than girls to engage in physical activity, which is an important indicator of cultural and gender-stereotyped perception of doing sports activities. Earlier research carried out on a sample of children of higher primary school grades show themselves that boys and girls differently assess sport and their own competencies in sport (Djordjic & Krneta, 2007). The result of the aforementioned gender-stereotyping suggests that girls attach to sport some masculine traits. Djordjic and Matic (2008) pointed out that “boys feel more competent in sports, prefer competition and physical challenge more than girls, and that they do sports in clubs to a significantly greater extent than girls. Finally, they note the significantly lower number of female sporting role models”. As the results of this study correspond with the results of research already completed, it can be seen as an indicator of insufficient engagement of parents, teachers and children themselves in the meantime.

The obtained results of the difference analysis of respondents in relation to their socio-economic characteristics are shown in Table 3.

Table 3. Differences in respondents by socio-economic characteristics

socio-economic characteristics 1 – low, 2 – middle i 3 – high status	Mean Rank			χ^2
	1	2	3	
Walking	415.72	442.47	481.70[1b2b]	6.81*
Moderate physical activity	450.33	429.90	486.01[2a]	8.04*
Intensive physical activity	342.52	337.93	425.91[1a2a]	26.68**

* 0.05, ** < 0,01 - Kruskal Wallis test
[1,2,3] subsamples, [a] < 0.01, [b] < 0.05 - Man Whitney test

Based on the obtained results, it can be concluded that statistically significant differences in all variables of physical activity in respondents of different socio-economic characteristics are in favor of children whose families belong to the highest category of socio-economic status, while the respondents whose families belong to low and middle status reported no statistically significant differences. These results correspond to the factors of influence on physical activity in children, which were mentioned in the first part of the study. On one hand it can be assumed that the parents of children who are now more physically active turned their attention to a significant extent to that part of the everyday of their children in the preschool and early school age, and thus further developed the working habit in children who are now physically active independently, without the support of the adults. In less active children, it can be assumed that the parents due to the low socio-economic status of the family did not have the conditions, nor considered a priority at the stage of primary socialization of their children to point to physical activity as part of a future lifestyle. Finally, it can be assumed that some of the children at the stage of adolescence distance themselves from physical activities, diverting their resources to develop other talents or skills, which can be encountered in literature (see: Rowland 1999). The need of adolescents to conform, due to peer pressure, except in cases where doing sport has become an important part of the lifestyle of the child, in everyday life, will distance children rather than make them closer to physical activity.

Further statistical analysis determined to what extent the respondents' place of residence differs the respondents from the aspect of physical activity (Table 4).

Table 4. Analysis of difference in physical activity of respondents by place of residence

Variable	Mean Rank	
	Village	City
Walking	471.21	445.38
Moderate physical activity	485.03**	424.64
Intensive physical activity	357.60	376.97

** < 0.01 - Man Whitney test

According to the results from Table 4, it can be concluded that moderate physical activity in the respondents from rural areas were statistically significantly more active than the population of children in the city. These results were expected, considering that the village as a socio-cultural context, due to the absence of large, busy streets and modern children gives more freedom to spend time in organized or spontaneous activities outside the house. This is not the case in the city, where the children's everyday life from an early age is conditioned by circumstances of parents to spend time together or take children to organized sports trainings. On the other hand, the range of activities that the city offers is significantly wider than in the village, which is why, beside sports and music schools, children often attend a school of foreign language, mathematics, art, go to the cinema and theater. Thus, physical activity becomes an option for urban, and one of the dominant in rural environment. Generally, the village and the city as a socio-cultural frameworks provide different opportunities for development, which is reflected in the manner of growing up and life style of children. Physical activity is one of the indicators of these manifest differences.

If the results of our study should be summarized in one sentence, it would read: “socio-economic characteristics of families significantly affect the intensity, form and quality of physical activity of children”. Such a conclusion is compatible with the results of previously published studies (La Torre, Masala, De Vito, Arzano, Fargione, & Capelli, 2003;

Maksimovic & Matic, 2006; Matic & Jaksic, 2007; Matic, Kuljic, & Maksimovic, 2010; Kuljic, Matic, & Maksimovic, 2014) indicating the socio-economic status of the family as a disposition to engage parents and children in physical activities. Authors emphasize parents' education, their qualification, type of place where they spent childhood, type of current residence of the family and parents' achievements in sports as key variables, and talk about their growing influence of economic characteristics on the physical activity of their children. Although indirectly, this study speaks in favor of these findings, indicating a relation of some socio-demographic parameters (gender, place of residence), socio-economic characteristics of the family and the type and intensity of their sports activities. Consequently, our findings are consistent with the conclusion that "without adequate conditions for the growth and development of an individual in a favorable socio-economic environment, physical activity cannot achieve its stated goal" (Matic & Jaksic, 2007). Similarly, Vandendriessche et al. (2012) point to the need of the public and local authorities to consider the possibilities for sports in all walks of life, to experience its beneficial effects and improve the level of physical fitness and motor coordination, especially those with lower socio-economic status. For them, according to the authors of individual studies (Neves et al., 2005; Matsudo et al., 2006), there are special opportunities for the improvement in the participation and level of physical activity, or reducing sedentarism.

Finally, these findings point to the necessity of informing the academic and professional community of the aforementioned relations, especially as due to the inability of the family to fulfill its function in this area, the focus should be directed gradually to other communities and institutions (schools, clubs, local governments, legislators), in order to make physical activity an increasingly desirable part of the lifestyle of children and young people.

Acknowledgements

The data used in this study were collected within the research project "Psychosocial correlates of physical and sedentary activities of pupils" (register number: 142-451-3558/2016-02), which was conducted by the Faculty of Sport and Physical Education, and financed by the Provincial Secretariat for higher education and scientific research.

References

Alexandre, M., Obert, P., Bonnet, P., & Courteix, D. (2003). Effects of socio-economic status on physical activity of prepubescent children. *Canadian Journal of Applied Physiology, 28*(2), 190-203.

Brodersen N. H., Steptoe, A., Boniface, D. R., & Wardle, J. (2007). Trends in physical activity and sedentary behaviour inadolescence: ethnic and socioeconomic differences. *British Journal of Sports Medicine, 41*(3), 140–144.

De Cocker, K., Artero, E.G., De Henauw, S., Dietrich, S., Gottrand, F., Béghin, L., Hagströmer, M., Sjöström, M., Plada, M., Manios, Y., Mauro, B., Molnár, D., Moreno, L.A., Ottevaere, C., Valtueña, J., Maes, L., & De Bourdeaudhuij, I. (2012). Can differences in physical activity by socio-economic status in European adolescents be explained by differences in psychosocial correlates? A mediation analysis within the HELENA (Healthy Lifestyle in Europe by Nutrition in Adolescence) study. *Public Health Nutrution*, *15*(11), 2100-2109.

Djordjic, V. (2006). Parents and physical activity of children of preschool and early school age. [Roditelji i fizička aktivnost dece predškolskog i mlađeg školskog uzrasta]. In *Proceedings of the interdisciplinary scientific conference with international participation: Anthropological status and physical activity of children and youth* (127-134). Novi Sad: Faculty of Sport and Physical Education.

Djordjic, V., & Krneta, Z. (2007). Adolescents and sport: a gender perspective. [Adolescenti i sport: rodna perspektiva]. In *Proceedings of the III International Conference "Sports Management"* (171-178). Belgrade: University "Braca Karic": Faculty of sport management; Olympic Committee of Serbia

Djordjic, V., & Matic, R. (2008). Age and gender as factors of influence on the physical activity of children and adolescents. [Uzrast i pol kao faktori uticaja na fizičku aktivnost dece i adolescenata]. In G. Bala (ed.), *Anthropological status and physical activity of children and youth* (pp. 55-77). Novi Sad: Faculty of Sport and Physical Education.

Giulianotti, R. (2008). *Sport: critical sociology*. [Sport: kriticka sociologija]. Belgrade: Clio.

Klein, M., Fröhlich, M., Pieter, A., & Emrich, E. (2016). Socio-economic status and motor performance of children and adolescents. *European Journal Of Sport Science*, *16*(2), 229-236.

Kuljic, R., Matic, R.**,** & Maksimovic, N. (2014). Socio-economic characteristics of physical activity of children in early school age. *Proceedings of Matica Srpska for Social Sciences*, *146*(1), 119-128.

La Torre, G., Masala, D., Vito De E., Arzano, I., Fargione, V., & Capelli, G. (2003). Physical activity and Socio-economic status: results of a pilot study. *Medicina dello sport, 56*(3)175-183.

Maksimovic, N., & Matic, R. (2006). Socio-economic characteristics as determinants of physical activity of parents and their children [Socio-ekonomske karakteristike kao determinante u fizičkoj aktivnosti roditelja i njihove dece]. In G. Bala (Eds.) *Anthropological status and physical activity of children and youth* (257-264). Novi Sad: Faculty of Sport and Physical Education.

Matic, R., & Jaksic, D. (2007). *Socio-economic characteristics and motor behavior of girls of younger school age* [Socio-ekonomske karakteristike i motoričko ponašanje devojčica mlađeg školskog uzrasta.]. In G. Bala (Ed.) Anthropological status and physical activity of children, youth and adults (213-221). Novi Sad: Faculty of Sport and Physical Education.

Matic, R., Kuljic, R., & Maksimovic, N. (2010). Motor behavior and socio-economic environment [Motoričko ponašanje i socio-ekonomsko okruženje]. *Teme, 4*, 1247-1260.

Matsudo, V. K., Andrade, E. L., Matsudo, S. M., Araujo, T. L., Guedes, J. S., Andrade, D. R., & Oliveira, L. C. (2006). Changes in Levels of Physical Activity According to Socio-Economic Level, After Five Years of an Intervention Program. *Medicine & Science in Sports & Exercise*, *38*(5), S369.

Mayer, E.S. (2002). *The Influence of Parental Income on Children's Outcomes*, Wellington: Knowledge Management Group, Ministry of Social Development.

Mollborn, S., Lawrence, E., James-Hawkins, L., & Fomby, P. (2013). *When do socioeconomic resources matter most in early childhood?. Population program*. Institute of Behavioral Sciences: University of Colorado Boulder.

Neves, R. C., Araujo, T. L., Cruciani, F., Andrade, E. L., Matsudo, S. M., & Matsudo, V. K. (2005). Impact Of A Five-year Intervention Program On Physical Activity Level Of A Low Socio-economic Region. *Medicine & Science in Sports & Exercise*, *37*(5), 248-249.

Rowland, T. W. (1999). Adolescence: A „risk factor" for physical inactivity. *President's council on Physical Fitness and Sports*, *3*(6), 1-8.

Sallis, J. F., Prochaska, J. J., & Taylor,W. C. (2000). A Review of Correlates of Physical Activity of Children and Adolescents. *Medicine and Science in Sports and Exercise*, *32* (5), 963-975.

Scheerder, J., Vanreusel, B., Taks, M., & Renson R. (2005). Social stratification patterns in adolescents' active sports participation behaviour: a time trend analysis 1969-1999. *European Physical Educational Review*, *11*(1), 5-27.

Strauss, R. S., Rodzilsky, D., Burack, G., & Colin, M. (2001). Psychosocial Correlates of Physical Activity in Healthy Children. *Archives of Pediatrics & Adolescent Medicine*, *155*(8), 897-902.

Vandendriessche J.B., Vandorpe, B.F., Vaeyens, R, Malina, R.M., Lefevre, J., Lenoir, M., & Philippaerts, R.M. (2012). Variation in sport participation, fitness and motor coordination with socioeconomic status among Flemish children. *Pediatric Exercise Science*, *24*(1), 113-128.