

CORRELATION BETWEEN PARENTS' AND PRESCHOOL CHILDREN'S PHYSICAL ACTIVITY IN CAPITAL OF CROATIA

Maja Vukelja, Luka Blažević, Sanja Šalaj

Faculty of Kinesiology, University of Zagreb, Croatia

Abstract

The aim of this study was to determine correlation between parents physical activity and physical activity of their preschool children in the capital of Croatia. Parents physical activity was measured with “Single item physical activity measure” and preschool childrens physical activity with “Netherlands physical activity questionnaire”. Both were filled out by parents. Study included 398 mothers and fathers and 398 of their preschool children aged 3-7 years. Results show low correlation between child's and parent physical activity, but medium correlation between mother's and father's physical activity.

Key words: *environment, child, movement*

Introduction

According to the World Health Organization (2016) physical inactivity has become one of the ten most mortality risk factors. Some of the devastating facts are that every fourth person in the world is not enough physically active, 80% of adolescents are not enough physically active (WHO, 2016) and 42 million worldwide preschool children, younger than 5, are overweight (WHO, 2011).

There is decreasing number of physically active people and children with aging (Strauss et al., 2001; Telebar, 2013; Milanović et al., 2012). Furthermore, children aged 10 to 16 in New Jersey spend 75,5% of the day inactive and only 1,4% of the day in vigorous activity (Strauss et al., 2001). Only 54% of studies in systematic review (Tuckers, 2008) shown that children aged 2 to 6 years were meeting physical activity recommendation from the National Association of Sport and Physical Education.

Human body is made to move. Physical activity is essential biological stimulus which is needed to keep functions and structures of organs and organ systems (Vuori, 2004). Physical inactivity inflicts damage on human health because it decreases functions of our muscles which is important for improvement and keeping humans health good (Mraković, 1995). Furthermore, deficiency of physical activity and sedentary way of life may cause development a number of diseases of the modern era.

In regard to previous studies, there is a need to initiate actions on a global and local level to promote physical activity and change people's view and attitude toward physical activity. The best way to make difference is to start with changes in early childhood with preschool children. There is more likely for children to stay active in adolescence and adulthood if they create a habit of physical activity in early age. Studies have shown that physical activity plays an important role in the fight against childrens obesity (Moore et al., 2003; Riddoch et al., 2009) and that children with higher levels of physical activity during childhood will have less body fat by the time of early adolescence (Moore et al., 2003). Study of Horvat and Sindik (2012) of preschoolers and their parents, shown that parent's interests and care about their children's quality of life has a big impact in creating habits in preschool children. Preschool children learn by watching and imitating adults. The proof for this is found in studies which show us that the children were 5,8 times more likely to be active if both of their parents are active (Moore et al., 1991) and if parents enjoyed physical activity (Irwin et al., 2005). Likewise, higher parental TV viewing is related with increased risk of higher TV viewing for their children (Jago et al., 2010). The aim of this study was to determine correlation between parent's physical activity and physical activity of their preschool children in capital of Croatia.

Methods

Participants, materials and procedure

The study included 398 male and female preschool children aged 3 to 7 and their parents. The preschool children attended three kindergartens in the capital of Croatia and were tested from March to May 2016. Parents physical activity was measured with “Single item physical activity measure” (Milton et al., 2010) and preschool children's physical activity

with “Netherlands physical activity questionnaire” (Bielemann et al., 2011). Both were filled out by parents. “Single item physical activity measure” showed a good validity in Hamilton’s study (Hamilton et al., 2012) where it has found a strong correlation between single-item and pedometer steps (0.81) and 7-day physical activity recall (0.51). Previous studies also showed that “Single item physical activity measure” is a good way for assessing people’s physical activity levels (Milton et al., 2010). The “Netherlands physical activity questionnaire” consists of 8 questions about children’s physical activity and their habits. First seven questions are about physical activity of a child, and the eighth one is about their inactivity. The final result for overall physical activity is obtained by summing results in first 7 questions.

Spearman correlation coefficient (ρ) was used to determine correlation between measures of physical activity of parents and children. Significance was set at $p < 0.05$.

Results

Correlation between parent’s and child’s physical activity measures is presented in Table 1.

Table 1: Spearmans correlation in all variables used in this study.

Variable	NPAQ	Ques. 1	Ques. 2	Ques. 3	Ques. 4	Ques. 5	Ques. 6	Ques. 7	SI mom	SI dad
NPAQ										
Ques. 1	0,5422									
Ques. 2	0,6638	0,2111								
Ques. 3	0,5812	0,2229	0,3218							
Ques. 4	0,6169	0,2922	0,3289	0,4085						
Ques. 5	0,3432	0,0131	0,1591	-0,1298	-0,0659					
Ques. 6	0,5795	0,3080	0,3360	0,2243	0,2259	0,0836				
Ques. 7	0,6035	0,2629	0,3264	0,3573	0,2980	0,0825	0,2737			
SI mom	0,1080	0,0756	0,0469	0,0491	0,0456	0,0369	0,0636	0,1196		
SI dad	0,0933	0,0110	0,0669	0,0538	0,0203	0,0455	0,1014	0,0704	0,5029	

Significant correlations are marked in bold. NPAQ – final result in “Netherlands physical activity questionnaire”; Ques.1-Ques.7 – results in every single question from “Netherlands physical activity questionnaire”; SI mom – result in “Single item physical activity” for mothers; SI dad – result in “Single item physical activity” for fathers).

Spearmans correlation show significant but low correlation between parents physical activity and physical activity of their preschool children aged 3-7 in the capital of Croatia. Furthermore, study shows significant medium correlation ($r_s = 0,50$) between mother’s and father’s level of physical activity.

Discussion and conclusions

Hamilton’s study (Hamilton et al., 2012) found that parents, on average, were engaging in at least 30 minutes of a moderate-intensity physical activity on 3 days of the week. In this study values are 2.53 days of the week for mothers and 2.84 days of the week for fathers engaged in moderate intensity physical activity during the week. Values are similar for fathers, but poorer for Croatian mothers of preschool children. Correlation results from our study suggest that in family with physically active father, mother is also physically active. We would expect positive results to child’s behavior, that is, physical activity level as well. The mean of NPAQ scores for the preschool children in the capital of Croatia measured in this study was 24.98, while the score for Brazilian children was 25.5 (Bielemann et al., 2011), which shows poorer results of children in Croatia. Creating habits in children is influenced by a number of factors. One of them is parent’s influence which is important in creating opinions, habits and motivation to do something. Parent’s influence is also important in children’s participation in physical activity. It seems like parental support and beliefs about their child’s competence are important factors on which depends will their children participate and how much will they participate in physical activity (Gustafson, Rhodes, 2006; Davison et al., 2003; Bois et al., 2004). Some of the previous studies show us that children were more likely to be active if their parents were active and enjoyed physical activity (Moore et al., 1991; Irwin et al., 2005). This was not found in our study. In the capital of Croatia there is no significant correlation between parents physical activity and physical activity of their preschool children aged 3-7yrs. It seems like physical activity of preschool children in the capital of Croatia does not depend on physical activity of their parents as shown in few other studies. Unfortunately, the research literature related to parental correlates of activity behavior in preschool children is limited (Hinkley et al., 2008). To design effective family-based interventions to promote PA in preschool children, a clear understanding of how parents influence their children’s PA behavior is required (Loprinzi et al., 2010). Several possible mechanisms are identified in previous studies for the effect of parents’ activity levels on children’s activity (Moore et al., 1991). The first hypothesized mechanism for the enhancement of physical activity levels within families is that parents (and siblings) serve as role models for activity. This presumption was not confirmed in our study: it seems that

it takes more in parent behavior than role modeling to affect child physical activity level. It is also possible that parents may enhance their children's level of activity by just supporting their participation in activities like purchasing sports equipment for them, providing transportation to parks and other activity-related facilities and providing reinforcement for physical participation (Moore et al., 1991; Loprinzi, 2010). A second hypothesized mechanism is that the strong association between parents' activity levels and the child's in previous research may simply reflect the tendency toward sharing activities. Based on that, we can assume that children in capital of Croatia are not active with their parents, but somewhere else like in kindergarten or caregiving institutions. Parents who perceived their children to be more competent and capable of actively playing were more likely to provide the instrumental and emotional support required for young children to be physically active (Loprinzi, 2010). Furthermore, the childcare center was identified as a strong determinant of physical activity in the children (Finn et al., 2002), as well as the time spent playing outside (Hinkley et al., 2008). Future studies that simultaneously investigate multiple variables across multiple domains would be useful to add new insight into correlates and influences on preschool children's physical activity.

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References

1. Bielemann, R. M., Reichert, F. F., Paniz, V. M., Gigante, D. P. (2011). Validation of the Netherlands physical activity questionnaire in Brazilian children. *International Journal of Behavioral Nutrition and Physical Activity*. <http://www.ijbnpa.org/content/8/1/45>.
2. Bois, J. E., Sarrazin, P. G., Brustad, R. J., Trouilloud, D. O., Cury, F. (2004). Elementary school children's perceived competence and physical activity involvement: the influence of parents' role modelling behaviors and perceptions of their child's competence. *Psychology of Sport and Exercise* 6(4): 381-397.
3. Davison, K. K., Cutting, T. M., Birch, L. L. (2003). Parents' Activity-Related Parenting Practices Predict Girls' Physical Activity. *Medicine and Science in Sports and Exercise*, 35(9): 1589-1595.
4. Finn, K., Johannsen, N., Specker, B. (2002). Factors associated with physical activity in preschool children. *The Journal of Pediatrics* 140 (1): 81-85.
5. Gustafson, S. L., Rhodes, R. E. (2006). Parental Correlations of Physical Activity in Children and Early Adolescents. *Sports Medicine* 36(1): 79-97.
6. Hamilton, K., White, K. M., Cuddihy, T. (2012). Using a single-item physical activity measure to describe and validate parents' physical activity patterns. *Research Quarterly for Exercise and Sport*, 83(2): 340-345.
7. Hinkley, T., Crawford, D., Salmon, J., Okely, A.D., Hesketh, K. (2008). Preschool children and physical activity: a review of correlates. *American Journal of Preventive Medicine* 34(5):435-441.
8. Horvat, V., Sindik, J. (2012). Povezanost i spolne razlike u pojedinim čimbenicima života predškolske djece. Zbornik radova Medimurskog veleučilišta u Čakovcu, lipanj 2012.
9. Irwin, J. D., He, M., Sangster Bouck, L. M., Tucker, P., Pollett, G. L. (2005). Preschoolers' Physical Activity Behaviours - Parents' Perspectives. *Canadian Journal of Public Health*, 96(4): 299-303.
10. Jago, R., Fox, K. R., Page, A. S., Brockman, R., Thompson, J. L. (2010). Parent and child physical activity and sedentary time: Do active parents foster active children? *BMC Public Health* 10: 194.
11. Loprinzi, P.D. Trost, S.G. (2010). Parental influences on physical activity behavior in preschool children. *Preventive Medicine* 50: 129-133
12. Milanović, Z., Pantelić, S., Sporiš, G., Krakan, I., Mudronja, L. (2012) Razlike u nivou tjelesne aktivnosti kod muškaraca i žena preko 60 godina starosti, 21. ljetna škola kineziologa Republike Hrvatske. Hrvatski Kineziološki Savez.
13. Milton, K., Bull, F. C., Bauman, A. (2010). Reliability and validity testing of a single-item physical activity measure. *British Journal of Sports Medicine* 45(3): 203-208.
14. Moore, L. L., Gao, D., Bradlee, M. L., Cupples, L. A., Sundarajan-Ramamurti, A., Proctor, M. H., Hood, M. Y., Singer, M. R., Ellison, R. C. (2003). Does early physical activity predict body fat change throughout childhood? *Preventive Medicine* 37(1): 10-17.
15. Moore, L. L., Lombardi, D. A., White, M. J., Campbell, J. L., Oliveria, S. A., Ellison, R.C. (1991). Influence of parents' physical activity levels on activity levels of young children. *The Journal of Pediatrics* 118(2): 215-219.
16. Mraković, M. (1995). Programirana tjelesna aktivnost u funkciji zdravlja. U: Zbornik radova 4. ljetne škole pedagoga fizičke kulture, Rovinj, 15-17.
17. Riddoch, C. J., Leary, S. D., Ness, A. R., Blair, S. N., Deere, K., Mattocks, C., Griffiths, A., Smith, G. D., Tilling, K. (2009). Prospective associations between objective measures of physical activity and fat mass in 12-14 year old children: the Avon Longitudinal Study of Parents and Children (ALSPAC). *British Medical Journal* 339:b4544.
18. Strauss, R. S., Rodzilsky, D., Burack, G., Colin, M. (2001). Psychosocial Correlates of Physical Activity in Healthy Children. *Archives of Pediatric and Adolescent Medicine* 155(8): 897-902.

19. Telebar, B. (2013). Angažiranost učenika u izvannastavnim i izvanškolskim sportsko-rekreativnim aktivnostima, 22. ljetna škola kineziologa Republike Hrvatske. Hrvatski Kineziološki Savez.
20. Tucker, P. (2008). The physical activity levels of preschool-aged children: A systematic review. *Early Childhood Research Quarterly* 23(4):547-558.
21. Vuori, I. (2004). Physical inactivity is a cause and physical activity is a remedy for major public health problems. *Kinesiology* 36 (2):123-153.
22. World Health Organization (2016). Physical activity (accessed 8th October 2016). <http://www.who.int/mediacentre/factsheets/fs385/en/>
23. World Health Organization (2011). Obesity and Overweight: Fact Sheet No. 3. World Health Organization, Geneva, Switzerland.