MOTOR BEHAVIOUR OF SCHOOLCHILDREN DURING RECESS AT SCHOOL

Oscar Romero-Ramos[1], Emilio Fernández-Rodríguez [1]Rafael Merino-Marban[1], Gloria González Campos[2]

1 Faculty of Educational Sciences, University of Málaga (Spain)

2 Faculty of Educational Sciences, University of Sevilla (Spain)

Aid received from the University of Málaga.

SUMMARY

Epidemiological and scientists studies are warning about level of overweight/obesity in our schoolchildren, and their possible influence on the health of these children along their life. The combination of physical activity and proper nutrition appears as one of the basic pillars to keep children in normal weight and healthy state. This study aims to analyze "how much" and "how" children 5 years old use space during school recess. We used the "pedometer" and "behavioural mapping" as registry tools, establishing a motor behaviours in their free play and the possibility of promoting healthy lifestyles. Being recess, along with classes of motor skills and physical education, key moments to promote physical activity of our students.

Key words: : **Behavioural mapping, spatial occupation, obesity, childhood, physical activity, health.**

INTRODUCCTION

Scientific epidemiological studies are alarmed about the level of childhood overweight/obesity in our schools, and their possible influence on the health of these children along their lives, resulting in problems of hypertension, diabetes, metabolic syndrome etc... (Jolliffe & Janssen, 2006; Huang, Ball & Franks, 2007). Unfortunately Spain is among the European countries with higher rates of obesity at school (Moreno, Mesana, Fleta, Ruiz, González, et al., 2005).

Physical activity (PA) presents itself as one of the basic pillars to keep away from a sedentary lifestyle and optimal health status (Jiménez-Pavón, Kelly & Reilly, 2010; OMS, 2002), and relative to ages of this work, studies evidence the importance of PA in childhood (Strong, Malina, Blimkie, Daniels, Dishman et al., 2005).

School sports, in a broad sense, is all kinds of physical activity during school time, and that is usually done into three particular moments: Physical Education (PE) class, recess and extracurricular activities (Blázquez & Ramírez, 1999; Otero, Navarro & Abelairas, 2014), being an ideal context for the promotion of PA among our children (Naylor & McKay, 2009; Stratton, 2000).

Of these three educational moments, the little time available for PE classes does not guarantee the recommendations of 60 minutes of daily practice of PA for children (USDHHS, 2008; WHO, 2010).

The PA that takes place in recess usually is not directed and remain unknown the extent to which environmental factors can influence at levels of PA done by the children of all ages (Arias, 2014), existing PA levels higher in children when we compared with Adolescents, even in similar contexts (Rowland & Hughes, 2006; Vilhjálmsson & Kristjansdottir, 2003).

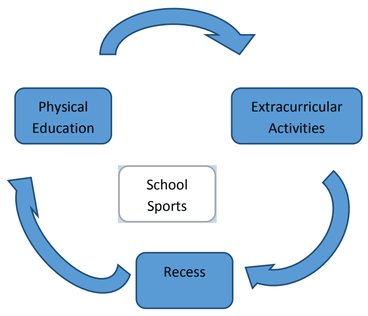

Figure nº 1.- Moments for practice Physical Activity at School. Own drawing from Blazquez and Ramirez (1999).

In this respect, school recess is available as an opportunity to promote the practice of PA among our children, and has demonstrated its usefulness in various educational or government interventions.

In this respect, the present study tries to quantify not only how students move during free play at recess (pedometer), but also how use space, valued by behavioral mapping. These results are associated with body mass index (BMI) and tries to relate these motor behaviours in the schoolyard with the states of normal weight / overweight and the possibility of promoting desirable behaviours and intervene in health promotion by encouraging PA during recess of schools.

Behavioural mapping has been used in many different studies, using four behavioral categories of activity (Bomfim & Campos-de-Carvalho, 2006; Meneghini & Campos-de-Carvalho 2003).

The work done in the schoolyard is approached from different focuses of study, with most of them made in primary education. Someones are focused on the type of PA performed during recess according to gender. Finding different behaviours according to the type of sport practiced (Abraldes & Argudo, 2008; Cantó & Ruíz, 2005; Otero et al. 2014). Anothers value the amount or intensity of PA performed during recess by both genders (Beighle, Morgan, Le Masurier & Pangrazi, 2006; Escalante, Backx, Saavedra, García-Hermoso, & Domínguez, 2011; Vilhjalmsson & Kristjansdottir, 2003), psychomotor profile by gender (Noguera & García, 2013), gender and social groups (Blatchford, Baines & Pellegrini, 2003).

METHOD

Participants

The study involved 119 children, aged 5 years old (65 boys and 54 girls), students from 4 preschools in the province of Malaga (Spain).

Materials

To evaluate the steps taken by students were used pedometers (Yamax Digiwalker SW-200, YDSW200). For obtaining the BMI, weight and height were registered. The means of the two attempts of weight and height were used for subsequent statistical analysis.

Behavioural mapping was done using a recording sheet (Fig.2). This was divided in 9 quadrants, corresponding to the 9 zones in which the school yard was divided. It was used for spatial positioning and recording behaviours of children. In the same recording sheet age, sex, height, weight, patio surface density (number students per square meter), distance travelled and behavioural unit (4 behavioural categories) was collected.

Procedure

Recording the number of steps and behavioural mapping was performed during recess and free play in the centre of Early Childhood Education. The collection of data was done for 20 min., although the recess was 30 min.

The time the child spent in each of the nine areas of the schoolyard or multizone if the child continuously passed between different areas (10 spatial categories) was recorded. Also four behavioural, predefined and exclusive categories were determined:

1) Passivity (P): The child observes situations or partners, does not make any displacement and does not maintain communicative or social activity with other

(2) Communication (C): The child does not make any displacement but maintains a communicative or social activity with others.

(3) Static Activity (SA): The child makes games or activities that do not involve displacement, although if actions manipulative, passive entertainment games, etc.

(4) Dynamics Activity (DA): The child makes games or activities that involve displacement in space.

Statistics analysis

Observational data analysis can be done from different perspectives. Generally, to record nominal systems (categories), the procedure involves the development of primary measures (frequency of occurrence of each category and duration of them) as well as secondary measures (relative frequency, rate, relative duration and average) length.

RESULTS

Zones	Fz: frequency boys	Fz: frequency girls	Dz: Duration minutes boys	Dz: Duration minutes girls
1	210	149	125,5	74,5
2	199	184	106	92
3	225	238	113	119
4	119	113	64,5	56,5
5	155	201	77,5	100,5
6	185	184	92,5	92
7	58	66	29	33
8	581	265	290,5	132,5
9	288	306	144	153
10	580	454	290	227

Table nº. 2. Descriptive zone categories based on gender.

Zone 1	Zone 2	Zone 3
Zone 4: 119 sucesos	Zone 5	Zone 6
Zone 7: 58 sucesos	Zone 8: 581 sucesos	Zone 9: 288 sucesos

Boys space occupation

Zone 1	Zone 2	Zone 3
Zone 4: 113 sucesos	Zone 5	Zone 6
Zone 7: 66 sucesos	Zone 8: 265 sucesos	Zone 9: 306 sucesos

Girls space occupation

Table nº.3.- Frequency representation of spatial occupation by gender, areas most and least used.

Category behavior	Dc: Duration in minutes of each category	uc: Rate	pi: relative frequency
DA	1285,5	0,0180345118	0,5410353535
SA	656,5	0,0092101571	0,2763047138
C	232	0,0032547699	0,0976430976
P	202	0,0028338945	0,085016835

Table nº. 4.- Descriptions of behaviour category (DA: Dynamic Activity, SA: Static activity, C: Communication, P: Passivity).

Discussion.

The amount of PA done during recess was higher in boys than girls. A result that agrees with the data obtained in similar studies with childrens: 9.5 years old (Beighle et al, 2006), 9 to 11 years old (Blatchford et al, 2003), 8.5 years old (Escalante et al, 2011) and children and adolescents aged 6-17 years (Arias, 2014).

- Analysing the spatial occupation for students, dominates the multizone Category 10, alternating with 8 and 9. The zones 4 and 7 were the least used. In this study, according to the frequencies of use, both sexes shared the same space at recess. This result does not coincide with other studies in primary school, where children used recreational space in a differentiated way, either by the amount of space used, children use more space than girls (Cantó & Ruiz, 2005), or the differential use of playground areas, with children who take up more space and use the centre, while girls use peripheral areas (Abraldes & Argudo, 2008).

- The category of behaviour most recurring is the DA, during the 20 minutes of recess, and the duration in minutes of this dominant category, we would have about 11 minutes of dynamic activity per student. The rest of the time is distributed among the other categories, especially in the static activity, less interesting categories from the point of view of health habits and physical activity. In this respect, we believe that the time should increase physical activity in the playground, through its educational promotion.

References.

Abraldes Valerias, J.A. & Argudo Iturriaga, FM (2008). Use of break by children of 4th and 6th year of primary education. Retos. Nuevas tendencias en Educación Física, Deporte y Recreación, 14, 88-91.

Arias A. (2014). Children & Adolescents physical activity levels during school break, an observational study using SOPLAY . Revista Educación Física y Deporte, 33 (1), 175-191.

Blatchford P., Baines E. & Pellegrini A. (2003). The social context of school playground games: Sex and ethnic differences, and changes over time after entry to junior school. The British Journal of Developmental Psychology. 21: 481- 505.

Blázquez, D. & Ramírez, F.A. (1999). La iniciación deportiva y el deporte escolar. Barcelona: INDE Publicaciones

Beets, M.W., Bornstein, D., Beighle, A., Cardinal, B.J. & Morgan, C.F. (2010). Pedometer-measured physical activity patterns of youth: A 13-country review. Am J Prev Med, 38 (2), 208-216.

Beighle A., Morgan C.F., Le Masurier G., & Pangrazi R.P. (2006). Children's physical activity during recess and outside of school. J Sch Health. 76: 516-520.

Bomfim, J. & Campos-de-Carvalho, M. (2006). Intercambios sociales en niños de 1-2 años y arreglos espaciales en guarderías brasileñas. Medio Ambiente y Comportamiento Humano, 7, 67-88.

Cantó, R. & Ruiz, L.M. (2005). Spontaneous motor behaviour in school recess: Analysis of gender differences in the space use. Revista internacional de ciencias del deporte. 1(1),p.28-45.

Escalante, Y., Backx, K., Saavedra, J.M., García-Hermoso, A. & Domínguez, A.M. (2011). Relationship between Daily Physical Activity, Recess Physical Activity, Age and Sex in Scholar of Primary School. Rev Esp Salud Pública. (5) 85: 481-489

Huang, T.T, Ball, G.D. & Franks, P.W. (2007). Metabolic síndrome in youth: current issues and challenges. Appl. Physiol. Nutr. Metab., 32 (1), 13-22.

Jiménez-Pavón, D., Kelly, J. & Reilly, J.J. (2010). Associations between objectively measured habitual physical activity and adiposity in children and adolescents: Systematic review. IJPO, 5 (1), 3-18.

Jolliffe, C.J. & Janssen, I. (2006). Vascular risks and management of obesity in children and adolescents. Vasc. Health Risk Manag., 2 (2), 171-187.

Lubans, D.R., Morgan, P.J. & Tudor-Locke, C. (2009a). A systematic review of studies using pedometers to promote physical activity among youth. Prev Med, 48, 307-315.

Lubans, D.R., Morgan, P.J., Callister, R. & Collins, C.E. (2009b). Effects of integrating pedometers, parental materials, and email support within an extracurricular school sport intervention. J. Adolesc. Health, 44, 176-183.

Meneghini, R. & Campos-de-Carvalho, M. I. (2003). Arranjos espacial na creche: espaços para interagir, brincar isoladamente, dirigir-se socialmente e observar o outro. Psicologia: Reflexão e Crítica, 16 (2), 367-378.

Moreno, L.A., Mesana, M.I., Fleta, J., Ruiz, J.R., González, M., Sarriá, A, Marcos A. et all. (2005). Overweight, obesity and body fat composition in Spanish Adolescents. The AVENA study. Ann Nutr Matabol, 49, 71-76.

Naylor P.J., & McKay H.A. (2009). Prevention in the first place: schools a setting for action on physical inactivity. Br J Sports Med.; 43:10-13.

Noguera Machacón, L. M. & García Puello, F. (2013). Psychomotor Profile in School Children: Gender Differences. Ciencia e Innovación en salud. 1 (2), 108-113.

OMS (2010). "Recomendaciones mundiales sobre actividad física para la salud.". Ginebra.

OMS (2002). "Informe sobre la salud en el mundo. Reducir riesgos y promover una vida sana". Ginebra.

Otero-Pazos, M.; Navarro-Patón, R.; & Abelairas-Gómez, C. (2014). El deporte escolar en función del género desde el punto de vista del profesorado. Trances, 6(5):289-310.

Shimon, J.M. & Petlichkott, L.M. (2009) Impact of pedometer use and self-regulation strategies on junior high school physical education students daily step counts. J. Phys. Activ. Health, 6, 178-184.

Stratton G. (2000). Promoting children's physical activity in primary school: an intervention study using playground markings. Ergo.; 43:1538-1546.

Strong W.B., Malina R.M., Blimkie C.J., Daniels S.R., Dishman R.K., Gutin B., Hergenroeder et al. (2005). Evidence based physical activity for school-age youth. J Pediatr. 146:732-737.

Tudor-Locke, C., Pangrazi, R.P., Corbin, C.B., Rutherford, W.J., Vincent, S.D., Raustorp, A., Tomson, L.M. et al. (2004). BMI-referenced standars for recommended pedometer-determined steps/day in children. Prev Med, 38, 857-864.

USDHHS US Department of Healthand Human Services (2008).Physical Activity Guidelines for Americans. Washington, DC: The Department.

Vilhjalmsson, R. & Kristjansdottir, G. (2003). Gender differences in physical activity in older children and adolescents: the central role of organized sport. Social Science & Medicine, 56(2), 363–374.

Corresponding author: oromero@uma.es

Oscar Romero Ramos