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Procedia - Social and Behavioral Sciences 45 (2012) 277 – 283

Procedia
Social and Behavioral Sciences

The 5th Intercultural Arts Education Conference: Design Learning

Children's peer relations and children's physical activity

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Abstract

Peers have an impact on children's physical activity (PA) in day care. To obtain the whole picture of children's physical activities we need to study the PA design of children and their peers. The activities of 838 children, including the PA level, were observed using systematic sampling. Children's skills were evaluated. The level of the children's PA tended to be lower if they had weaker social contacts with their peers. The children that were physically active sought each other's company. In company with a more independent and self-directive peer, the children tended to be less physically active.

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Keywords: peer relations; early childhood; physical activity; children's agency; social strategies

1. Introduction

PA and play have a significant role in promoting a child's holistic growth, development, learning and wellbeing (Gallahue & Ozmun, 2002). Furthermore, a physically active lifestyle is likely to prevent health problems such as obesity and obesity-related health risks already in early childhood (Stigman et al., 2009; Sääkslahti et al., 2004) and to reduce later osteoporosis (Janzs et al., 2006). There are no gender differences in PA in day care settings (Nupponen, Halme, Parkkisenniemi, Pehkonen & Tammelin, 2010). Because PA habits are formed at a young age (Kantomaa et al., 2011; Telama et al., 2005; Reilly et al.,

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doi:10.1016/j.sbspro.2012.06.564

2004), specific recommendations for PA have been issued for the early childhood education context in Finland (Ministry of Social Affairs and Health, 2005).

In order to stimulate children's PA in day care, a variety of elements must be taken into consideration. Cardon, Van Cauwenberghe and De Bourdeaudhuij (2009) showed that increasing children's PA is more complex than simply altering the physical environment. Among school children and adolescents, peer relations are shown to play a significant role in determining the PA level (Efrat, 2009; Fitzgerald, Fitzgerald and Aherne, 2012). Children's independence increases with age, and the importance of friends also increases (Steinberg & Monahan, 2007). It is plausible that in designing environments for activating children physically, peer relationships should be taken into account as well. It may be that the presence and involvement of adults decrease children's PA level (cf. Brown et al., 2009).

A growing body of studies has shown the associations between parental support and child PA, whereas much less is known about the conceivable effect of peer support (Davidson & Jago, 2009). Moreover, studies on the peer support associated with PA have mainly been carried out in school settings (Efrat, 2009; Fitzgerald, Fitzgerald & Aherne, 2012). Among those few studies in the child care context, Gubbels et al. (2011) found that social factors were associated with the physical activity intensity in 2–3-year-old children. Although the activity took place indoors, peer group size was negatively associated with activity level. In line with this study, social environmental factors such as smaller group size among 2–3-year-old children (Cardon et al., 2011) and 3–5-year-old children (Brown et al., 2009) were shown to associate with physical activity intensity. In addition, Brown and colleagues argued that 3–5-year-old children are more physically active when adults are not present. A major transition takes place from one-to-one relationships to the ability to relate to peers in groups (Hay, Payne & Chadwic, 2004; for age groups cf. Gallahue & Ozmun, 2002).

In Finland, on average 46% of all under-school-aged children attended day care organized by the municipality in 2005. The percentage of attending day care rises along with age: 23% of children under 3, 62% of 3–5 year olds and 67% of 6-year-old children attend day care and preschool (Ministry of Social Affairs and Health, 2006). Thus, the day care setting offers a potential opportunity to promote PA among young children.

In a typical Finnish day care group, there are approximately twenty children and three adults. By their sheer volume, peers have a strong impact on children's PA. Children often share similar interests and skills with other children, which makes activities done together more motivating. In order to obtain a more in-depth picture of children's physical activities, we need to study children's design of peer activities.

2. Study design

The objective of this article is to investigate the relation between peer relations and PA in the day care context. The research problems guiding the study are:

- How are children's interaction strategies toward their peers related to children's PA?
- How are the peer contact qualities related to children's PA?

1.1. Observations and peer relations

Altogether 892 children from 50 Finnish day care centres and 14 childminders participated in the research. The observation was done between the hours of 8:00-12:00 in four-minute intervals according to a systematic sampling technique. Among the observed items was the children's physical activity level, which was rated from one to three: 1) low (sitting, using a pen, eating etc.); 2) intermediate (walking, whole body movements) and 3) high (includes at least some running, more active playing or physical

exertion). The children's nearest peer contact was also written down after each observation. In other words, the observers wrote down the code number of the child that the observed child was the most involved with. In total there were 19,608 observations.

1.2. Evaluations of the children's personality and skills

The teachers evaluated the children's skills on a scale from one to five. Since the children's nearest peer contact was specified during the observation, it was possible to merge the qualities and skills of the peer contact into the observation data. This arrangement made it possible to study the relations between children's physical activity and their peer relations.

3. Results

Altogether there were 892 children participating in the research. Of the children 51% were boys. The age of the children varied between one and seven years, and the mean age was 4.7 years (*SD* = 1.313). The mean value of children's physical activity in Finnish day care between the hours of 8:00-12.00 was 1.54 (*SD* =.670).

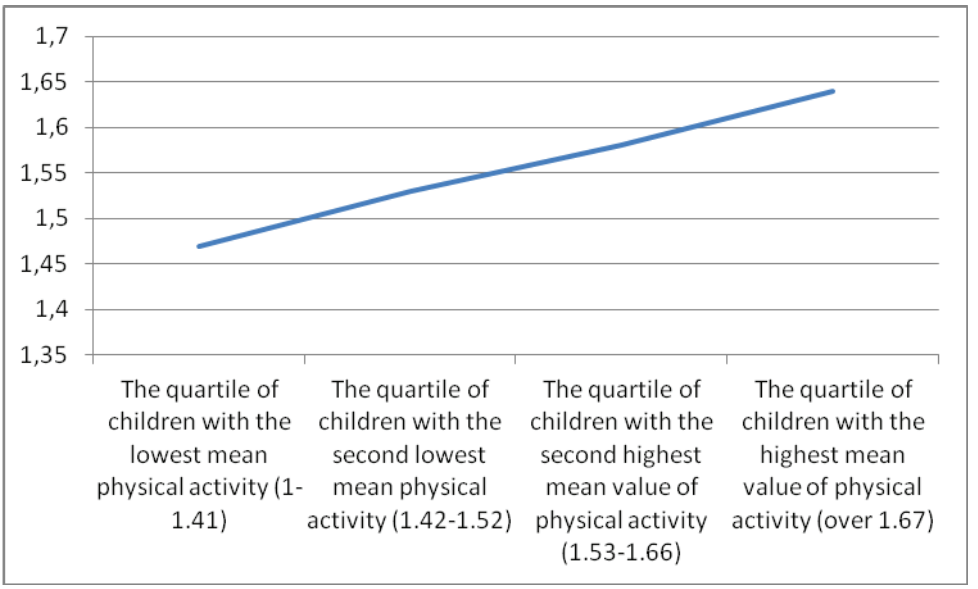


Fig. 1. The mean PA level (1-3) of the children's peer contacts in four groups of children categorized according to their own PA level (in Finnish day care centres between 8:00-12:00)

The children who were physically active sought each others' company. The difference is statistically very significant, F (3, 859) = 68.958, p = < .001. The cause can be contextual or depend on the learning environment qualities, or the children themselves might have elicited the physical activity.

The children were the most active physically when they interacted with their peers. However, there were interesting differences among the age groups. During the observation, the children's main object of attention was observed. When the children under 3 years old were interacting with one child, their

percentage of high PA was the highest (14.3% of the time) and when interacting with a group of children, the level of attention was the second highest (13.0% of the time). On the other hand, when the 3-5-year-old children were interacting with a group of children, their percentage of high PA was the highest (18.8% of the time) and when interacting with one child, it was the second highest (12.4% of the time). For the 6-year-old children, groups became even a more important factor for stimulating PA. They were highly physically active during 21.7% of the time that they interacted with a group of children and 11.9% of the time that they interacted with another child. The presence of a group of children seemed to increase the children's PA the older the children were. Figure 2 shows that the children's personal qualities had an impact on the children's PA.

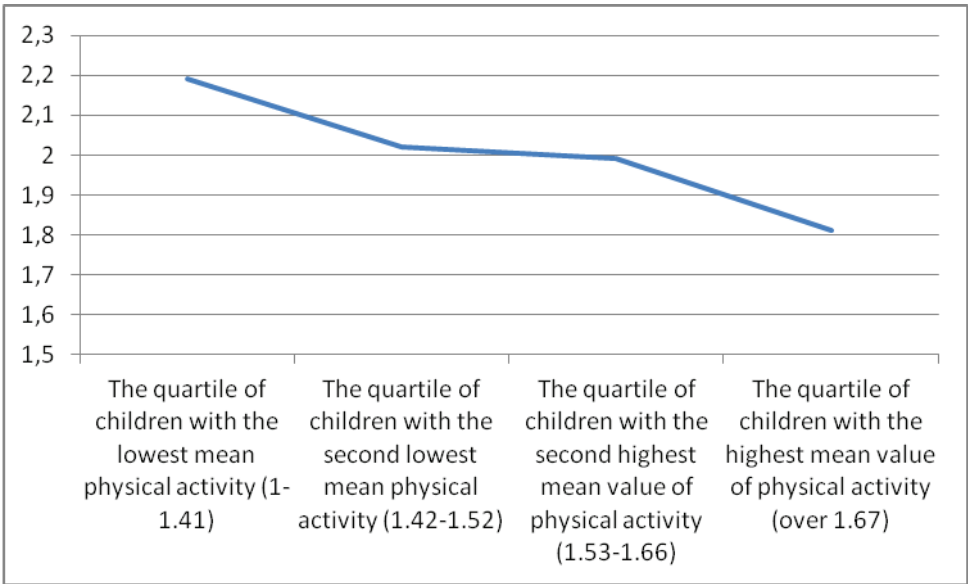


Fig. 2. The mean value of the children's withdrawnness as evaluated by the teachers in each quartile of the children's mean PA level in Finnish day care centres between 8:00-12:00

The educators evaluated the children's personalities, for example, the children's levels of adjustment and withdrawnness. Children's withdrawnness was defined as thus: "*Withdraws easily, contacts with other children are often weak.*" The children's PA tended to be at a lower level if they had weaker social contacts with their peers. The differences between the groups were statistically significant, F (3, 849) = 4.130, p = .006. If the children were more withdrawn from other children, their PA tended to be at a lower level. However, the result does not indicate whether the withdrawn children themselves had a tendency to be less physically active or if the lower PA was a result of the lack of peer stimulation on the children. It is noteworthy that in every age group, the children's level of attention towards non-social targets reduced the children's PA levels. Withdrawnness may increase children's risk for peer rejection or loss of friendship. The relational outcomes depend on the child's age, gender and social-cultural context.

Figure 3 shows the direct relation between children's PA and their peer relations.

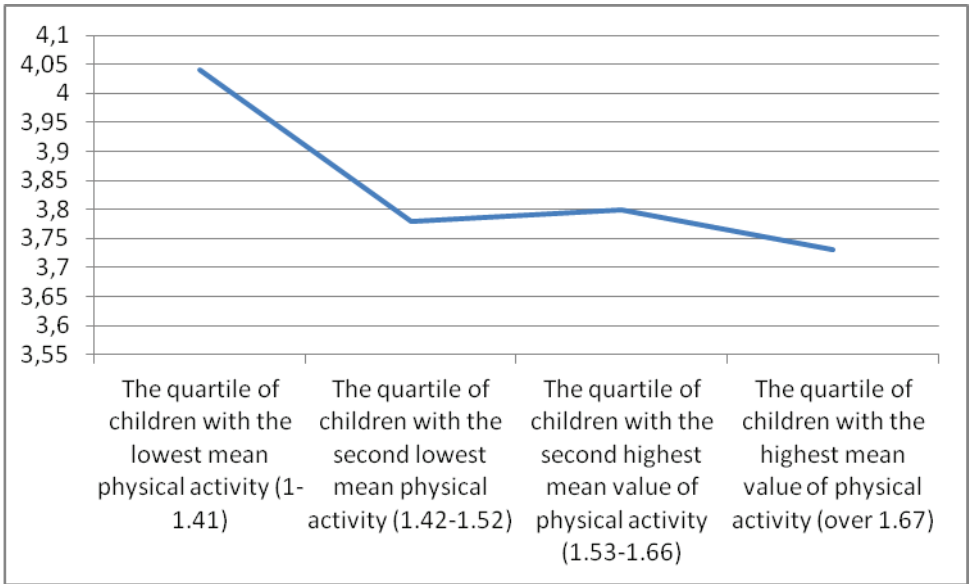


Fig. 3. The mean value of the children's peer contact independence in each quartile of the children's mean PA level

In the observation data, the children's nearest peer contact was one observed item. In the data analysis, the evaluations of the nearest peer contacts were merged together with the observation data. Thus, it was possible to study the children's activities in relation to their nearest peers. In company with a more independent and self-directed peer, the children tended to be less physically active. This tendency is statistically very significant, F (3, 854) = 7.952, $p < .001$. It may be that independent and self-directed children rely more on their own interests, which does not stimulate the other children physically.

4. Discussion

The present study suggests that children's social strategies and the personal qualities of their peers have an impact on children's PA in day care. The children with active peer relations were also active in their physical activities. These children seemed to find each other. The withdrawn children were less physically active than other children. Children who were observed to be in the vitinity of independent peers were less physically active.

Particularly in day care settings and in the context of physical activity, *active play* or *physical play* should be discussed instead of *physical education* or *exercise*. Free play, especially outdoors and in open inside spaces, allows children to experience the joys of movement, creativity and friendship. Playing is a natural way of acting for children, but when adults have a PA or exercise in mind, children's playfulness and creativity are easily left behind. The play culture also connects children to their parents' and grandparents' worlds and thus contributes to the cultural heritage.

Peers are an important ingredient in activating children physically. Children's PA and skills should be considered as a social and cultural whole in which children's personal relations play an important role. Social interaction should be a basis for structured active moments and should help support a positive atmosphere. Shy and socially withdrawn children in particular will benefit the most from having their self-confidence with peers nurtured. At the same time, spending time with peers stimulates children's activity level. Withdrawn children could also profit from special sessions where they can occasionally act

in a smaller group of peers with similar characteristics. This would give them extra support in the form of space and time to interact with other children and to experience the joy of active play.

Structured sessions for active play are essential for teaching social intercourse, concentration, motor skills and social regulation. However, children's physical education is not just related to structured physical education sessions. There should be more open and accessible spaces in day care environments and unstructured situations for children to fulfil their natural desire for physical activities. Free, active play opportunities ought to be made possible as part of the everyday activities in order to meet PA recommendations.

The research data is based on rather large observations done with systematic sampling, which speaks in favour of population validity. However, the sampling took place between the hours of 8:00 and 12:00. Thus, a comprehensive description of children's PA has not been covered in this research. It would be interesting to see whether the same results could be traced in different cultural and social settings.

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