

FAMILY SOCIOECONOMIC BACKGROUND AND CHILDREN'S PHYSICAL  
ACTIVITY. PARENTAL PERCEPTIONS OF CHILDREN'S PHYSICAL  
ACTIVITY. A DESCRIPTIVE STUDY BASED ON THE HÄLSOVERKSTADEN  
STUDY.

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## FAMILY SOCIOECONOMIC BACKGROUND AND CHILDREN'S PHYSICAL ACTIVITY. PARENTAL PERCEPTIONS OF CHILDREN'S PHYSICAL ACTIVITY. A DESCRIPTIVE STUDY BASED ON THE HÄLSOVERKSTADEN STUDY.

This cross-sectional study had two aims; firstly, to study the association of family socioeconomic background and children's physical activity, and secondly to study associations between family socioeconomic background and parent's attitudes towards their children's physical activity. The associations were studied by using data from the Hälsoverkstaden study. The data was collected by Folkhälsan Research Center among 10- to 11-year-olds Swedish-speaking schoolchildren and their parents in the Helsinki region during autumn 2006. The aim of Hälsoverkstaden was to examine how social and psychosocial factors in families and schools determine children's, grades 4<sup>th</sup> and 5<sup>th</sup>, health behaviors.

Data from a total of 812 matched child-parent pairs who completed the questionnaires regarding to children's physical activity, family socioeconomic background and parents' attitudes towards child physical activity were used in this study. The associations were examined by Spearman's rank-correlation analysis, cross-tabulation, Mann-Whitney U-test and Kruskal-Wallis test.

The results showed that family socioeconomic background was associated both with parents' attitudes towards child's physical activity and with children's physical activity levels. Children's physical activity levels varied by the socioeconomic background of their parents: higher educational level of respondent parents was associated with children's higher leisure time physical activity levels. As well, higher household income level was related to higher physical activity levels of children during leisure time. Results showed that parents' attitudes toward child's PA differed between parents from different family socioeconomic backgrounds. Educational level of parents and low household income were associated with indirect outcomes of child physical activity. High household income and high education from the other parent were associated with internal motivation of child physical activity.

According to the results, it seems that parents value children's physical activity differently regarding to their socioeconomic background. Further, family socioeconomic background also determines children's physical activity levels. In future interventions, these should be taken into account.

**Foreword**

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**ABBREVIATIONS**

PA                      Physical activity

## 2. INTRODUCTION

Physical activity (PA) is essential for children's physical, psychological, and social health with several positive effects (Strong et al. 2005). Despite the health enhancing effects of PA, alarmingly low numbers of children are physically active enough. A decline in PA levels begins already in adolescence or even earlier in childhood resulting in increased overweight and obesity (Gordon-Larsen, Nelson & Popkin 2004).

Children's PA behavior is multifactorial and shaped by demographic, psychological, social, and environmental factors (Sallis et al. 2000). The home environment, more specifically parents, has been stated as one of the strongest socializing agents for children's PA behavior (Bugental & Goodnow 1998). There are several ways through which parents influence children's PA, such as: direct role-modeling (Raudsepp 2006), encouragement, provision of resources to perform physical activity (Edwardson & Gorely 2010), and through beliefs and attitudes toward physical activity (Tinsley 2003).

Parents' influence on children's PA is determined by their socioeconomic background, including: income, level of education and/or position in the labor market (Borraccino et al. 2009, Zambon et al. 2006). A link between the family socioeconomic background and the child's PA levels has been found to exist in multiple studies: children from families with high family income and high parental education are more physically active (Lehto et al. 2009, Gordon-Larsen et al. 2004). Attitudes toward healthy lifestyles and physical activity have shown to be more common among people with high socioeconomic background (Seabra et al. 2012, House 2001).

In Finland the health inequalities have increased between the different sections of the population (Ministry of Social Affairs and Health 2013). Finnish Ministry of Social Affairs and Health has as a main objective to reduce these differences. The national strategy for PA promoting health and wellbeing 2020 aims to promote PA that enhances people's health and wellbeing so that by the year 2020 Finns will be more physically active (Ministry of Social Affairs and Health 2013). In order to reduce inequalities in health and wellbeing and promote child PA in all socioeconomic groups, it is highly important further to study how family socioeconomic background associated with children's PA levels and as well to study how family socioeconomic background is associated with parental attitudes toward children's PA.

This thesis examines the associations of PA among 10 to 11-year-old Swedish-speaking school-children living in the Helsinki region with their parents' socioeconomic background as well as the associations of family socioeconomic background with parents' attitudes towards their children's PA.

### **3. LITERATURE REVIEW**

#### **3.1. PHYSICAL ACTIVITY**

PA is defined as “any bodily movement produced by the skeletal muscles that results in energy expenditure” (Caspersen 1989). PA is commonly categorized into four dimensions by its type, intensity (how hard the exercise is), frequency (how many times you exercise) and duration (how long you exercise non-stop). PA for children includes playing, different games and sports in formal or informal settings, participating in organized physical activities, transportation, chores, recreation, physical education, and planned exercise (Mäkinen 2010).

##### **3.1.1. Benefits of physical activity in childhood**

PA is beneficial for health throughout the lifespan and it has been stated as one of the most important determinants of health (Strong et al. 2005). Evidence from longitudinal studies has suggested that being PA during childhood predicts the likelihood for being physically active throughout into adulthood (Tammelin 2005, Telama et al. 2005, Malina 1991). PA has several positive outcomes for both the long- and short-term health. PA helps children to develop healthy musculoskeletal tissues. It helps to achieve and maintain good bone strength that further contributes to normal skeletal development and reduces the risk of osteoporosis later in life. Being physically active during childhood prevents the development of risk factors for cardiovascular disease (Strong et al. 2005). Moreover, excessive weight gain is prevented by PA (Strong et al. 2005).

PA and participation in sports has shown to be associated with higher levels of positive emotional well-being (Steptoe 1998). Through being physically active, children have an opportunity for social interaction and they learn new social skills, such as how to follow rules, respect others (Bailey 2005) and make new friends (Jago et al. 2009). Being physically active gives opportunities for self-expression and building of self-confidence: positive effects on self-esteem and self-perceptions of competence and body image have been documented (Fox 2000). There is some evidence that symptoms of anxiety and depression are lower among children with higher levels of physical activity (Strong et al. 2005). Moreover, the cognitive functions and academic achievement of children have shown to be improved among children who report higher levels of PA (Hillman et al. 2008).

### 3.1.2. Recommendations for school aged children's PA

To achieve the health-enhancing effects, children should follow the recommendations for PA. According to the international recommendation, children and adolescents aged 5-17 should be physically active at least 60 minutes in a moderate-to-vigorous way (defined as any activity that increases heart rate and makes to feel out of breath some of the time) a day (WHO 2011, Strong et al. 2005). It is recommended that most of the everyday PA should be aerobic.

According to the Finnish recommendations for PA in children, primary school-aged children should be physically active (in a way which is appropriate for the age) for at least 60 to 120 minutes a day and secondary school children and youth 60 to 90 minutes a day (Opetusministeriö, Nuori Suomi 2008). Moreover, it is recommended that children should avoid continued periods of sitting for more than two hours at a time and spending more than two hours per day with screen time media (ibid.).

### 3.1.3. Children's PA levels in Finland

Finnish school children's PA levels have been studied in several studies. A global matrix of grades on the PA of children and youth has been developed by Active Healthy Kids Canada (2013). They compared children's PA levels in fifteen countries across the world (Australia, Canada, Colombia, England, Finland, Ghana, Ireland, Kenya, Mexico, Mozambique, New Zealand, Nigeria, Scotland, South Africa and the United State). Based on the Finnish report card on Physical Activity for Children and Youth, Finnish children were ranked on the ninth place in the comparison: one-fourth of Finnish children and adolescents meeting the recommendations of at least 60 minutes of daily PA (Liukkonen et al. 2014). Research done in Finland has shown that the prevalence for children being PA at least 60 minutes a day varies between 20 and 60 percent depending on the study, age group and way of measuring (Lasten ja nuorten liikunnan asiantuntijaryhmä 2008). Tammelin et al. (2013) studied Finnish school-aged children's PA during years 2010-2012. In the study, PA was measured objectively by accelerometers among 698 children and with surveys among 1700 children. The study showed that 50 percent of primary school students were at least 60 minutes PA in a moderate-to-vigorous-way a day. According to the objective measurements, primary school students were on average 62 minutes physically active a day in a moderate-to-vigorous way. The proportion of primary school children who were physically active at least 90 minutes a day was nine percent (ibid.). Another study examining Finnish primary school children's PA showed that 32 percent of boys and

22 percent of girls from grade five were physically active at least six days in a week, at least 60 minutes a day (Kaikkonen et al. 2012). In this study children's PA levels were self-reported (ibid.).

It has been found that both boys' and girls' PA levels are as highest at the age of 11 in Finland (Ministry of Social Affairs and Health 2013). A decline in PA levels occurs after the age of 12: the amount of children who meet recommendations for PA have shown to be less common the older the children get (Kaikkonen et al. 2012, Telama & Yang 2000). The decline has shown to be on average steeper in Finland than in other Western countries (Ministry of Social Affairs and Health 2013).

#### **3.1.4. Children's PA contexts**

Children are physically active in many different contexts, but majority of their daily PA is done during their leisure time (Heelan et al. 2005). Leisure time PA for children include activities that are done outside of school (Nuori Suomi 2008). Children often choose these activities themselves and they can be motivated by many different reasons, such as health benefits, social contacts, and fun. However, school children's participation in organized PA is often primarily due to their parents' interest and support (Allender et al. 2006). The most popular sports among Finnish children were football and bicycling (Nuori Suomi 2010). Team sports, such as football, floorball and ice hockey were the most common sports among boys. Running the most popular sport among girls, followed with swimming and walking. Around 43 percent of children reported participation in some organized physical activity; participation in organized sports was more common in the county of Uusimaa compared to the rest of Finland (ibid.).

The school environment greatly influences children's daily PA levels (Verstraete 2006). PA during school time includes all PA that take place in the school, such as physical education, PA during break times, active commuting/travelling to school and playing beginning and end of the school days (Karvinen et al. 2012). Children in elementary schools of Finland have 90 minutes of obligatory physical education per week, according to the national curriculum (Liukkonen et al. 2014). Sport and PA afternoon clubs are additionally provided in some schools (ibid.). Tammelin et al. (2013) measured school children's PA during school time and they found that during six-hour school days, primary school students averaged 32 minutes of PA in moderate-to-vigorous-way a day. Finnish children are on the second place in the global matrix in school time PA (Active Healthy Kids Canada). When it comes to active transportation, Finnish children are world leader in the comparison between the fifteen countries: 74 percent of children used active transportation to schools (ibid.).

### **3.1.5. Determinants of children's PA behavior**

Children's PA behavior is determined by several factors, divided into physiological and developmental factors, environmental factors and in psychological, social, and demographic factors (Kohl & Hobbs 1998). Physiological and developmental factors include growth and maturation, physical fitness and physical limitations. Environmental factors include access to facilities and equipment for physical activities, safety and seasonality. Psychological, social, and demographic factors have been studied the most regarding children's health behavior. These factors include the influence of significant others such as parents and peers, family socioeconomic background, self-efficacy, gender, and age (ibid.). Parents (or other adult caregiver at home) have been found to be one of the most important influences for the children's PA behavior because most of children's time is spent together with their parents during the early years of development and growth (Sallis et al. 2000). During childhood, when children's behaviors are under less volitional control, parents are the ones who determine where and what activities children engage in and what resources they can use. The socioeconomic background of parents' highly influences these choices (Beets et al. 2010). In this study the focus will be on the parents' attitudes in a relation to their socioeconomic background.

### **3.2. Parents' influence on children's PA behavior**

According to previous studies, there are two aspects of parental behaviors that support children's PA behavior (Welk et al. 2003). Firstly, through parental social support and secondly through their own PA behavior, called as role modeling. Parental social support and role modeling have been suggested to influence children's PA levels mostly due to positive effect for children's confidence to be physically active (ibid.).

#### **3.2.1. Parental social support**

Parental social support has been suggested to be a key determinant for children's PA (Troost & Loprinzi 2011, Davison 2004, Sallis et al. 1999). Parental social support has been defined as a form of social support where parents influence their children's PA behaviors (Beets et al. 2010). In detail, social support refers to an interaction between parents and their children where various forms of social support are used. Based on the review by Beets et al. (2010), two categories of parental support for children's PA have been identified: tangible and intangible support.

### **3.2.2. Tangible support**

Tangible support refers to parents' direct behaviors that facilitate children's involvement PA (Beets et al. 2010). Two dimensions of tangible support have been defined: instrumental and conditional. Instrumental support has been defined as provision of direct aid and services. Parents show instrumental support by providing transport to places and programs where children can be PA and they provide financial support for equipment for PA and for membership fees. Conditional support has been defined as parents direct involvement of the activity with children, which include parents watching child being active or being active together with the child (ibid.).

Trost et al. (2011) found that children reported higher levels of PA when they received transport from their parents to parks and other activity-related places. Higher PA levels were also found among children whose parents signed them up for PA programs and whose parents made PA equipment available (Trost et al. 2011, Hofer et al. 2001).

It has been found that children's PA behavior improved by parents' active play with their children (Trost et al. 2011). A similar finding was found by Edwardson & Gorely (2010): they found in their systematic review that children's moderate-to-vigorous PA, overall PA and leisure time PA were associated with parents' direct involvement. The positive effect of parents' involvement is dependent on the amount of involvement: Stein & Raedeke (1999) found in their study done among children aged 13-14 years that parents who were too minimally or too highly involved in their children's activities had a negative effect on children's participation in physical activities. Too low or too high parental involvement has shown to increase stress and reduce feelings of enjoyment associated with participation in physical activities (Hellstedt 1987).

### **3.2.3. Intangible support**

Two dimensions of intangible support have been identified: motivational support and informational support. Motivational support (also called emotional support (Taylor et al. 1994) includes parents' provision of verbal and nonverbal encouragement for children to participate in sports and physical activities, praise for involvement and positive feedback. Informational support includes provision of advices and information, for example to discuss the importance and benefits of PA and how to be PA (Beets et al. 2010). Parents' attitudes towards child PA are one of the ways they indirectly influence the PA levels of children (Edwardson & Gorely 2010). Attitudes are defined as the sum of persons' beliefs about phenomena (Miller 2005). It has been found that the interaction between the

parents and a child is influenced by the beliefs parents have about their child (Fredricks & Eccles 2005). Parental belief system includes parents' belief about the importance of PA, their perception of child's competence and their expectations that their child will succeed. Parents' beliefs influence the degree of encouragement and provision of opportunities they provided for their child, which further resulted in child's self-perceptions of competence for PA, child's perceptions of the importance of PA, and the motivation for being PA (ibid.).

Previous studies have stated that parents transfer attitudes to their children (Anderson et al. 2009). Parents' and children's positive attitudes towards vigorous intensity team and individual sports were associated with higher levels of physical activity and lower levels of sedentary behaviors among children. According to the findings, parents and children valued PA similarly for the most part (ibid.). It has been found that parents, who believe in the importance of PA, tend to have PA children (Davison et al. 2006, Duncan et al. 2005, McGuire & Neumark-Sztainer 2002). Bois et al. (2005) studied parental perceptions of their children's physical competence in a relation to children's PA involvement among 152 French children aged 9 to 11 years and their parents. They found that children's PA was influenced directly by fathers' beliefs and indirectly by mothers' beliefs about children's competence. Children have shown to participate more likely in active play (defined as unstructured free time activities which takes place outdoors (Veitch et al. 2006)) if they perceived that PA was beneficial for their health and wellbeing (Brockman et al. 2011).

It has been found that children are more likely to report higher levels of PA when their parents encourage them to be active (Määttä et al. 2014, McGuire et al. 2002). Parental encouragement has been found to enhance children's motivation to continue their involvement in activities (Prochaska et al. 2002). Research has shown that parents who provided informational support, such as information about the positive effects of PA, tended to have more active children (Davison et al. 2006, Duncan et al. 2005, Trost et al. 2003). Children whose parents provided them skills and information on how to be PA also reported higher levels of PA (ibid.).

#### **3.2.4. Parental role modeling**

In addition to parental social support, parental role modeling is one of the ways parents are influencing children's PA behaviors. Role modeling reflects on children's identification with their parents' behavior through observational and social learning (Bandura 1986). It has been stated that observational learning is most powerful when the observed person is experienced as respected, powerful or considered to be like the observer (ibid.).

Edwardson & Gorely (2010) found in their review that children's PA was positively associated with parental modeling (defined as children's perception of their parents' PA levels). A study conducted in Finland by Määttä et al. (2014) among 10-11-year-old school children showed that modeling from fathers had a direct effect on children's PA, whereas modeling from mothers had an indirect effect through perceived competence and attraction to physical activity. Another Finnish study showed that children whose parents were active at least two to three times a week reported higher levels of PA compared to children whose parents were less active (Kaikkonen et al. 2012).

On the other hand, some studies that have reported that parents' own PA are not directly related to their children's PA levels (Bauman et al. 2012, Trost et al. 2003, Sallis et al. 2000). Because of the contradictory results of the impact of role modeling on children's PA behavior, it is not clear that physically active parents would have physically active children or vice versa.

With the knowledge that parental role modeling may influence children's PA levels, it needs to be considered that parents' negative behaviors also influence children's behaviors (Fogelholm et al. 1999). It has been found that physically inactive parents have children who are physically inactive (ibid.).

### **3.3. SOCIOECONOMIC BACKGROUND**

Adult populations' socioeconomic background is usually defined by their educational level, income and/or by their position in the labor market (Marmot 2005, Lynch & Kaplan 2000). Children and adolescents' socioeconomic background is defined by their parents' socioeconomic status (Currie et al. 2008). Socioeconomic status/background is determined by the conditions under which a person was born and is living in (Marmot 2005). The unequal distribution of social determinants results in social inequalities in child and adult health, which are seen between and within countries worldwide. The relationship between socioeconomic background and health means that for each increase in socioeconomic situation there is an equal increase in health (Chen 2004). Individuals with lower socioeconomic background have poorer health than individuals with higher socioeconomic status. International studies have shown that low socioeconomic status is associated with various negative health outcomes in children, such as chronic diseases, overweight, injuries and acute illnesses (ibid.). There are several possible reasons why people with lower socioeconomic background have higher risk for poor health. These reasons include poorer living conditions, less access to health care, less knowledge and greater psychological stress (ibid.). In Finland it has been found children

from families of lower educated mothers were more often overweight (Kaikkonen et al. 2012). A lower socioeconomic background has shown to predict a less healthy lifestyle regarding to PA and nutrition (Hanson & Chen 2007).

Previous studies have shown that the amount of PA in children is associated with parents' socioeconomic background (Borraccino et al. 2008). In many studies conducted in high-income countries, higher family socioeconomic background has been shown to be positively associated with higher PA in children (Raudsepp 2006, Tammelin 2003, Hanson & Chen 2002). Although, children from low-, middle- and high-income countries have shown to have different patterns of PA (Active Healthy Kids Canada 2013). It has been shown that children tend to have higher levels of overall PA in countries where there is less PA infrastructure (including, few parks, playgrounds and sidewalks) (ibid.). According to the global matrix of children's PA, the comparison of fifteen countries showed that overall PA was higher in low- to middle-income countries. For example, Mozambique had the highest levels of overall PA, and it has been noticed that the high PA levels of children consisted mainly of daily transport and domestic tasks. In high-income countries, overall PA consists mostly of leisure-time activities (ibid.). Jimenez-Pavon et al. (2012) studied the associations between parental education and 10 to 12 –year old children's PA in seven European countries. They found country specific differences between countries with different socioeconomic background and sociocultural factors. A direct association was found between parental education and girls PA in Greece and Spain and with boy's PA in Norway. Further, boy's PA in Hungary was associated directly with paternal education (ibid.).

In Finland children's PA has been studied in a relation to their family socioeconomic background. Lehto et al. (2009) found in their study on 10-11-year-old Finnish school children and their parents that high family income was associated with regular PA in children. In addition, they found that children who had parents with higher education reported higher levels PA. Kantomaa et al. (2007) found that adolescents' PA was predicted by higher parental education. Further, they found that the likelihood of participating in sports and exercise was higher among children of higher income families. It has been stated that parents have a central role in funding and organizing children's involvement in physical activities. Participation in organized PA showed to be associated with high family income (Kantomaa et al. 2007). A recent Finnish study report showed stated that children's participation in organized PA might be too expensive for two third of Finnish families while the costs for doing PA in organized sports have become significantly more expensive during the past

ten years (Puronaho 2014).

Children from families with lower socioeconomic background meet more barriers for PA than children from families with higher socioeconomic background, which result in lower levels of PA (Gordon-Larsen et al. 2006, Duncan et al., 2002). These barriers include economic factors, such as parents having difficulties to pay membership fees or equipment needed for PA and difficulties to pay for transportation. Children's participation in organized sports is dependent of parents' income level (Puronaho 2014). Further, it has been found that children's interest for PA can decrease if parents do not want or can't pay fees for children's physical activities (Rajala et al. 2012). Tandon et al. (2012) found that children from families with lower socioeconomic background had lower access to play equipment but higher access to electronic media devices.

Economic factors also include home environment and neighborhoods. Families with lower socioeconomic background often have fewer possibilities and longer distances to physical activity areas. It has been shown that when neighborhoods are perceived as unsafe and less adequate for children's unorganized leisure time activities, parents may not allow their children to be outside and play (Holt et al. 2009). Tandon et al. (2012) found that households with lower socioeconomic background had more restrictive rules about outdoor play, compared to families with higher socioeconomic background. Parents with low socioeconomic background often have jobs with evening and night shifts, which may result in children having to help with housework or babysitting without a possibility to be physically active (ibid.).

### **3.3.1. Parental attitudes toward child's PA in a relation to socioeconomic background**

### **3.3.2. Significance of the study**

It has been stated that parents with higher income and education levels often have more positive attitudes towards PA and healthy lifestyles (Seabra et al. 2012, Wardle & Steptoe 2012, Raudsepp, 2006). Higher educational level may result in better knowledge about health benefits of physical activity for children (Lynch & Kaplan 2000), which then can result in more positive attitudes toward child PA.

It has been found that children from families with high and medium socioeconomic background recognize more benefits of PA, compared to children from families with lower socioeconomic

background (House 2001). Seabra et al. (2012) found in their study conducted in children aged 8-10 years that children from families with high socioeconomic status perceived that their parents influenced their PA participation. Further they perceived that PA had a greater importance and they recognized more benefits of doing PA, compared to children from families with low socioeconomic background. Children from high socioeconomic status families reported that they received positive role modeling and encouragement from their parents and more enjoyment of PA compared to children from families with low socioeconomic status (ibid.). According to Seabra et al. (2012) this finding might be explained by the positive attitudes towards PA and healthy lifestyle that parents' with higher socioeconomic background often have, these attitudes and beliefs are then transferred to their children and affects their behavior.

In Finland there has not been done any previous research about parental attitudes towards children's PA, in a relation to their socioeconomic background. By including several measures of family socioeconomic background, new information about the relationship between socioeconomic background of the family and child PA will be obtained.

#### **4. AIMS OF THE STUDY**

The aim of this study is to study the associations of family socioeconomic background and parent's attitudes of children's PA with 10-11-year-old children's PA.

The research question is if family socioeconomic background is associated with parent's attitudes of children's PA and with children's PA.

##### **4.1. Hypothesis**

Two hypotheses were set:

1. Family socioeconomic background is associated with children's PA.
2. Family socioeconomic background is associated with parents' attitudes toward children's PA.

## 4.2. Study design

A descriptive study based on quantitative data in cross-sectional design.

## 5. MATERIALS AND METHODS

### 5.1. Study protocol

This thesis is done in collaboration with Folkhälsan. Folkhälsan is a Swedish-speaking non-governmental organization, which was founded in 1921.

The current study is based on the data set from the Hälsoverkstaden (The Health Workshop) health promotion project; a cross-sectional study conducted by the Folkhälsan Research Center among 10- to 11-year-olds Swedish-speaking schoolchildren and their parents in the Helsinki region during autumn 2006 (Roos et al. 2007, Roos et al. 2008). The aim of Hälsoverkstaden was to examine how social and psychosocial factors in families and schools determine children's, grades 4<sup>th</sup> and 5<sup>th</sup>, health behaviors in PA, food habits and sleep habits. The Ethics Committee of the Department of Public Health at University of Helsinki approved the Hälsoverkstaden study in 2006. The detailed questionnaires used in children and in parents can be found from the study reports by Roos et al. 2007 and Roos et al. 2008.

Hälsoverkstaden project was target to the Swedish-speaking elementary schools with at least 50 students in the region of Uusimaa in southern Finland. 44 Swedish-speaking schools were asked to take part in the study. The headmasters in 31 primary schools decided that their school would participate in the study, a response rate of 65 percent.

An information letter was sent to the teachers in the participating schools and the teachers then informed children about the study. Children were given an information sheet about the study and a consent form, which they brought to their homes. One of the parents and the child gave their consent to agree their participation in the study. Participants were also informed about the voluntariness of their involvement in the study and that it could have been discontinued at any stage.

## 5.2. Participants

A total of 1273 children, with response rate 79 percent answered the questionnaires. They filled in the questionnaires in a supervised classroom situation. In order to minimize misunderstandings one or two staff persons of Hälsoverkstaden study were present in the classroom, so that children had an opportunity to ask questions related to the instructions to fill questionnaires. It took about 20 to 45 minutes to fill the questionnaires.

Parents' questionnaires were given to the children at school and they distributed it to their homes and to their parents. A stamped envelope and a description of the project were distributed to the parents together with the questionnaires. Parents completed the questionnaires at home and returned the full filled surveys by mail to the research group. Totally 820 parents, out of 1270, a response rate of 64 percent, took part in the study.

In this study, data from a total of 812 matched child-parent pairs who completed the questionnaires were used. Of the participating children 404 were girls and 404 boys. Sex from four children was missing. 48 percent of children were in the grade 4 and 54 percent were from grade 5.

Of the parents who completed the questionnaire 674 (83 percent) were mothers and 136 (17 percent) were fathers. Majority (85 percent) of the parents reported living together with the other parent/guardian and 15 percent of the respondents were single parents. Three percent of parents reported that their children only had one guardian.

76 percent of respondents were Swedish speaking while 23 percent were Finnish speaking.

## 5.3. Data collection

### Children's physical activity (PA)

Children's PA was measured by asking children to report the frequency and duration of their leisure-time PA, participation in sport club training, participation in competitive sport events, common activity during leisure-time and school time and school physical education.

### PA during leisure-time

Children's PA during leisure time was measured by two questions. Children reported their leisure-

time PA as the hours and times per week exercising or playing sports in a sports club or by themselves. The answering options for frequency of PA were as following: at least five times per week, three to four times per week, one to two times per week, one to two times per month, more seldom than once in a month and I am not physically active at all. For the analysis of this study the answer options were recoded into three categories; at least five times a week (3), three to four times a week (2) and less than one to two times a week (1).

The duration of PA during their leisure time was measured by asking how many hours per week they were PA (including physical activities in organized sports or done by themselves). The response options were: at least seven hours, around four to six hours, around two to three hours, around one hour, around half an hour and I am not physically active at all. For the analysis of this study answers were recoded into; at least seven hours (4), four to six hours (3), two to three hours (2) and less than one hour (1).

### **PA during school time**

Children's PA during school time was measured by two questions: How often are you active under the school days during one school week (PA during the school sport lessons and during the breaks at school included). The answering options for frequency of activity were as following: every day, three to four days per week, one to two days per week and rarely. For the analysis of this study the answering options were recoded into following two categories: physically active every day (2) and less than three to four times a week (1).

The duration of PA during the school days was measured by asking how many minutes' children were physically active during one school day (PA during the sport lessons at school not included). The answering options were as following: over one hour, about 45-60 minutes, about 30-45 minutes, about 15-30 minutes and less than 15 minutes. For the analysis of this study the answering options were recoded into four following categories: more than one hour (4), 45 to 60 minutes (3), 30 to 45 minutes (2) and less than 30 minutes (1).

### **Family socioeconomic background**

Information describing family socioeconomic background was obtained from parents. In this study parents' highest completed education, disposable monthly household income, parents' capability to pay their bills, capability to and buy food and clothes to their family were used as measures to de-

termine the socioeconomic background of the family.

## **Education**

Parents were asked to report their highest completed education after primary education. The answer options were as following: no vocational education, vocational education, bachelor degree or undergraduate, master degree or licentiate degree or doctorate degree. For the analysis of this study, two dichotomous variables were formed to describe the respondent's educational level and the other parent's educational level. Dichotomous variables were created so that no vocational education, vocational education and bachelor or undergraduates were categorized as lower education (0) and having a masters' degree or licentiate degree or doctorate degree were categorized as higher education (1).

## **Economical resources**

### **Household income**

Incomes of parents were measured by asking them to estimate the monthly disposable income of their household. The answering options were as following: < 1260, 1260 -1680, 1681-2100, 2101-2520, 2521-3360, 3361-4200, 4200-6000 and > 6001 €. Because the households were of different sizes, the disposable household incomes were calculated according to OECD consumption unit (Statistics Finland, 2014) where the size of the consumption unit is indicated as the sum of the weights of household members. The first adult aged 18 and over gets the value of 1.0, subsequent adults aged 18 and over gets value of 0.7 and each person under 18 gets the value of 0.5 (ibid.). The households were divided into tertiles according to the disposable monthly incomes: lowest income group (1), middle-income group (2) and highest income group (3). The lowest income group consisted of monthly incomes < 1260 €, 1260-1680, 1681-2100, 2101-2520 and 2521-3360, the middle-income group consisted of incomes 3361-4200 and the highest income group consisted of incomes 4200-6000 and > 6001 €.

Parents' were also asked to report how often they had money enough to buy clothes and food, which are needed for them and for the whole family. The answering options were as following: always, often, sometimes, rarely and never. For the analysis of this study a dichotomous variable was created where answers always and often were named as always/often (1) and the other category

included answers sometimes, rarely and never (0).

Parents were also asked to report if they had difficulties to pay their bills. The answering options were as following: particularly rarely or never, rarely, sometimes, often and very often. The answer options often to very often were recoded as often (0), the answer option sometimes as (1) and particularly rarely or never and rarely recoded as no difficulties (2).

### **Parents' attitudes**

Parent's attitudes toward children's PA were measured by asking them to evaluate on a five-item scale, 13 statements related to children's PA. The answering options for the statements were as following: not important at all (1), only some important (2), relatively important (3), important (4) and very important (5).

The 13 statements were:

1. Child make friends
2. Child has energy to concentrate better at school
3. Physical activities keeps child away from harm
4. Children's physical activity skills develop
5. Children's health improve
6. Being physically active in organized sports is fun for child
7. Child learn how to work together with other children
8. Being physically active maintains children's physical health
9. Physical activities are good tools to raise the child
10. Child have success in competitions
11. Child enjoys being physically active
12. Physical activity develops skills that are needed later in life
13. Parent encourages children to be physically active

The 13 above statements were used to create three variables, which were: Internal motivation of children's PA, Indirect outcomes of children's PA and Future outcomes of children's PA. These three summary variables were computed by summing up the scores for the included items and dividing them by the number of items included in this variable. Internal motivation of children's PA

consisted of these statements: 4) children's physical activity skills develop, 5) children's health improves, 6) being physically active in organized sports is fun for child, 8) being physically active maintains children's physical health, 11) child enjoys being physically active and 13) parent encourages children to be physically active. Cronbach's alpha of this measure was .805. Indirect outcomes of children's PA consisted of these statements: 1) child make friends, 2) child has energy to concentrate better at school, 3) physical activities keeps child away from harm and 7) child learn how to work together with other children. Cronbach's alpha of this measure was .760. Variable Future outcomes of children's PA included answers to statements: 9) physical activities are good tools to raise the child, 10) child have success in competitions and to 12) physical activity develop skills that is needed later in life. Cronbach's alpha of this measure was .614.

#### **5.4. Statistical analysis**

The statistical analyses were conducted by using The Statistical Package for Social Sciences (SPSS) version 19.0 (IBM Inc., Chicago, IL, 2010). A p-value of  $<0.05$  was considered to be a statistically significant result. Descriptive statistics were calculated to describe the sample and the distribution of the variables. Means, standard deviations, medians and Cronbach's alphas were calculated for the variables of parental attitudes towards children's PA. Cronbach's alpha measured the internal consistency for the multi-item scale of parents' attitudes towards children's PA. Spearman's rank-correlation analysis was conducted between the family socioeconomic background and parents' attitudes towards children's PA and children's PA variables.

Mann-Whitney U-test and Kruskal-Wallis test were used to assess differences between groups. The associations between parents who had or had not money enough to buy food and clothes and their attitudes towards children's PA were tested by Mann Whitney test. The associations between parents' education level and their attitudes towards children's PA were tested by Mann Whitney test.

The associations between the three different household income groups and parental attitudes towards children's PA were tested by Kruskal Wallis test. The associations between parents having difficulties to pay their bills and their attitudes towards children's PA were also tested by Kruskal Wallis test.

Associations between the family socioeconomic background variables and children's PA were examined by using Chi square.

## 6. RESULTS

### 6.1. Family socioeconomic background and children's PA

Table 1 presents variables describing the family socioeconomic background and children's PA separately for boys and girls and together. The proportion of children who had parents with a high income was 39 percent. Majority of parents answered that they had no difficulties to pay their bills and reported having always or often money enough to buy food and clothes to their family. More than half of the parents had lower education (lower than bachelors' degree).

Majority of the children reported being physically active every day, as well being physically active more than 45 minutes per day during the school days. One third of children were physically active at least five times a week during their leisure time. More than half of children showed to be physically active more than four hours a week during their leisure time. Boys were more physically active compared to girls.

Table 1. The distribution (% , N) of basic characteristics among 10-11-year old Finnish children and their parents.

	Girls (n)	Girls (%)	Boys (n)	Boys (%)	Total (N)	Total (%)
<b>Household income</b>						
High	136	37	154	42	291	39
Middle	97	27	100	27	197	27
Low	133	36	115	31	250	33
Missing (n)					74	
<b>Difficulties to pay bills</b>						
No difficulties	328	82	331	82	663	82
Sometimes	53	13	57	14	110	14
Often	21	5	16	4	37	5
Missing (n)					2	
<b>Money enough to buy clothes/food</b>						
Always/often	374	93	380	94	757	94
Rarely/never	28	7	24	6	53	6
Missing (n)					2	
<b>Education parent respondent</b>						
Higher	160	40	172	43	334	42
Lower	239	60	230	57	471	58
Missing (n)					7	
<b>Education other guardian/parent</b>						
Higher	221	40	211	42	308	42
Lower	150	60	156	58	433	58
Missing (n)					71	
<b>PA school time</b>						

<b>(frequency/week)</b>						
Every day	312	77	325	81	640	79
Less than 3-4 days a week	91	23	77	19	169	21
Missing (n)					3	
<b>PA school time (duration/ day)</b>						
More than 1 hour	151	37	200	50	355	44
45-60 min	125	31	108	27	233	29
30-45 min	77	19	59	15	136	17
Less than 30 minutes	51	13	32	8	83	10
Missing (n)					5	
<b>PA leisure time (frequency/week)</b>						
At least 5 times a week	116	29	147	37	265	33
3-4 times a week	185	46	154	39	340	42
Less than 1-2 times a week	102	25	99	25	202	25
Missing (n)					5	
<b>PA leisure time (duration/week)</b>						
At least 7 hours	87	22	122	31	211	26
4-6 hours	138	34	128	33	266	33
2-3 hours	116	29	96	24	214	27
Less than 1 hour	60	15	48	12	108	14
Missing (n)					13	

\*PA (Physical activity)

## 6.2. Family socioeconomic background and children's PA

Spearman correlation coefficients between family socioeconomic background and children's PA are presented in Table 4. Higher education from the respondent parent and higher levels of children's PA (frequency and duration) during leisure time were positively correlated. Higher household income and higher children's PA levels (both frequency and duration) during leisure time were correlated. Parents having problem to pay their bills was correlated with children's low PA levels during leisure time. Parents who didn't have money enough to buy food and clothes to their family was correlated with children's low PA levels during leisure time.

Table 4. Correlation coefficients between parents' education, economical resources of the family and children's PA during leisure and school time (frequency and duration). Measured by Spearman correlation.

Variable	Education respondent	Education the other parent/guardian	Household income	Difficulties to pay bills	Money enough to buy food/clothes
Leisure time PA (frequency)	.089*	.051	.087*	-.072*	-.101**
Leisure time PA (duration)	.087*	.072	.095*	-.045	-.065
School time PA (frequency)	.066	.01	.047	-.047	.001
School time PA (duration)	-.014	.053	.029	.001	.043

p < 0.05 level; \*\* p < 0.01 level; \*\*\* p < 0.001 level

\*PA (Physical activity)

### 6.3. Parents' education and children's PA

Table 5 presents associations between parents' education and children's PA. Children of higher educated parents reported higher levels of leisure time PA than children of lower educated parents. The educational level of both parents was associated with hours being PA during leisure time and education from the respondent parent was associated with times being PA during leisure time.

Table 5. Parents' education and children's PA during leisure and school time. Chi square.

	Education respondent parent			Education other parent/guardian		
	Higher (%)	Lower (%)	P-value	Higher (%)	Lower (%)	P-value
<b>PA leisure time (frequency/week)</b>						
At least 5 times a week	37	30		35	32	
3-4 times a week	43	42		43	43	
Less than 1-2 times a week	21	28		22	26	
Total (N)	332	468	0.035	430	306	0.37
<b>PA leisure time (duration/week)</b>						
At least 7 hours	29	25		28	25	
4-6 hours	35	32		35	33	
2-3 hours	26	27		28	25	
Less than 1 hour	10	17		9	17	
Total (N)	330	462	0.038	426	303	0.026
<b>PA school time (frequency/week)</b>						
Every day	82	77		79	78	
Less than 3-4 days a week	18	23		21	22	
Total (N)	470	332	0.063	432	306	0.076
<b>PA school time</b>						

<b>(duration/ day)</b>						
More than 1 hour	43	45	45	41		
45-60 min	30	28	29	30		
30-45 min	17	17	15	19		
Less than 30 minutes	10	10	11	11		
Total (N)	469	331	0.783	430	306	0.414

\*PA (Physical activity)

#### 6.4. Family income and children's PA

Table 6 shows that children from high-income families reported higher levels of PA. Children from high income households showed to be more PA during their leisure time, compared to children from middle- and low –income households. Children from high-income households reported higher frequency of school time PA, compared to children from middle- and low-income families.

Table 6. Household income and children's PA during leisure and school time (frequency and duration). Cross tabulation.

	<b>Household income</b>			P-value
	High (%)	Middle (%)	Low (%)	
<b>PA leisure time (frequency/week)</b>				
At least 5 times a week	38	30	29	
3-4 times a week	41	45	44	
Less than 1-2 times a week	21	26	27	
Total (N)	290	195	248	0.165
<b>PA leisure time (duration/week)</b>				
At least 7 hours	32	21	26	
4-6 hours	37	32	32	
2-3 hours	22	31	26	
Less than 1 hour	10	16	15	
Total (N)	286	195	246	0.022
<b>PA school time (frequency/week)</b>				
Every day	83	73	79	
Less than 3-4 days a week	17	27	21	
Total (N)	290	196	250	0.035
<b>PA school time (duration/ day)</b>				
More than 1 hour	45	43	41	
45-60 min	29	26	32	
30-45 min	16	22	15	
Less than 30 minutes	10	9	12	
Total (N)	290	195	249	0.326

\*PA (Physical activity)

## 6.5. Money enough for food and clothes, difficulties to pay bills and children's PA

Table 7 illustrates that it children who had parents who always or often had enough money to buy clothes and food had a higher frequency for PA during leisure time compared to children whose parents had rarely or never money enough to buy clothes and food.

Table 7. Money enough for food and clothes, difficulties to pay bills and children's PA. Cross tabulation.

	Money enough to buy clothes/food		P-value	Difficulties to pay bills			P-value
	Always/Often	Rarely/Never		No difficulties	Sometimes	Often	
PA leisure time (frequency/week)							
<b>At least 5 times a week</b>	34	19		34	26	28	
<b>3-4 times a week</b>	42	42		42	47	32	
<b>Less than 1-2 times a week</b>	24	40		24	27	38	
<b>Total (N)</b>	<b>752</b>	<b>53</b>	<b>0.015</b>	658	110	37	0.14
PA leisure time (duration)							
<b>At least 7 hours</b>	27	22		27	26	25	
<b>4-6 hours</b>	34	22		34	32	25	
<b>2-3 hours</b>	26	38		27	25	28	
<b>Less than 1 hour</b>	13	18		12	18	22	
<b>Total (N)</b>	747	50	0.123	653	108	36	0.53
PA school time (frequency/week)							
<b>Every day</b>	79	79		80	74	78	
<b>Less than 3-4 days a week</b>	21	21		20	26	22	
<b>Total (N)</b>	754	53	0.972	660	110	37	0.314
PA school time (duration/ day)							
<b>More than 1 hour</b>	44	49		44	45	43	
<b>45-60 min</b>	29	32		29	27	32	
<b>30-45 min</b>	17	13		17	17	14	
<b>Less than 30 minutes</b>	11	6		10	11	11	
<b>Total (N)</b>	752	53	0.534	658	110	37	0.996

\*PA (Physical activity)

## 6.6. The distribution of parents' attitudes towards children's PA

The means, standard deviations, medians and Cronbach's alphas for parents' attitudes toward children's PA and the three summary variables are presented in Table 2. Of the three summary variables, the internal motivation factors of children's PA had the mean ( $M= 4.34$ ), compared to indirect outcomes of children's PA ( $M= 3.98$ ) and to future outcomes ( $M= 2.96$ ).

Table 2. Parents' attitudes towards children's PA. Mean, standard deviation, median and Cronbach's alpha among parents of the 10-11-year Finnish children.

	(n)	Mean	Standard deviation	Median	Cronbach's alpha
<b>Internal motivation of children's PA</b>	<b>771</b>	<b>4.36</b>	<b>0.48</b>	<b>4.78</b>	<b>.805</b>
Children's health improves	803	4.55	0.59	5.00	
Being physically active maintains children's physical health	801	4.42	0.64	4.00	
Parent encourages children to be physically active	806	4.41	0.65	4.00	
Being physically active in organized sports is fun for child	804	4.35	0.69	4.00	
Child enjoys being physically active	795	4.26	0.73	4.00	
Children's physical activity skills develop	810	4.16	0.70	4.00	
<b>Indirect outcomes of children's PA</b>	<b>798</b>	<b>3.98</b>	<b>0.70</b>	<b>4.00</b>	<b>.760</b>
Child learn how to work together with other children	809	4.27	0.74	4.00	
Child has energy to concentrate better at school	806	3.94	0.87	4.00	
Child makes friends	807	3.91	0.90	4.00	
Physical activities keep child away from harm	806	3.79	1.10	4.00	
<b>Future outcomes of children's PA</b>	<b>787</b>	<b>2.96</b>	<b>0.73</b>	<b>3.00</b>	<b>.614</b>
Physical activities are good tools to raise the child	793	3.58	0.92	4.00	
Physical activity develop skills that is needed later in life	808	3.41	1.06	4.00	
Child have success in					

Answer options varied from not important at all (1) to very important (5).

\*PA (Physical activity)

## 6.7. Family socioeconomic background associated with parents' attitudes towards children's PA

Spearman correlation coefficients between family socioeconomic background and parents' attitudes towards children's PA are presented in Table 3. Results showed that other parent/guardians' educational level was positively correlated with internal motivation of children's PA. The educational level from both parents was negatively correlated with indirect outcomes of children's PA. Respondent's low education was correlated with future outcomes of children's PA.

The household income was positively correlated with internal motivation of child's PA. Household income was negatively correlated with indirect outcomes of children's PA.

Table 3. Correlation coefficients between parents' education, household income, difficulties to pay bills, if parents have money enough to buy food/clothes and parents' attitudes/beliefs toward children's physical activity. Measured by Spearman correlation.

Variable	Education respondent	Education the other parent/guardian	Household income	Difficulties to pay bills	Money enough to buy food/clothes
Internal outcomes of children's PA	.018	.080*	.148***	-.040	-.060
Indirect outcomes of children's PA	-.223***	-.088*	-.085*	.022	.001
Future outcomes of children's PA	-.098**	-.004	.052	-.035	-.001

$p < 0.05$  level; \*\*  $p < 0.01$  level; \*\*\*  $p < 0.001$  level

\*PA (Physical activity)

Mann-Whitney test showed that internal motivation of children's PA did not differ significantly between educational levels: respondent parents with lower education (Md=4.33) and parents with higher education (Md=4.50),  $U = 69584$ ,  $z = -.506$ ,  $p = .613$ ,  $r = -0.02$ . Indirect outcomes of children's PA differed significantly between parents with lower education (Md=4.00) and parents with higher education (Md=4.00),  $U = 56212,5$ ,  $z = -6.26$ ,  $p = .000$ ,  $r = -0.22$ . Future outcomes of children's PA

differed significantly between parents with lower education (Md=3.00), and parents with higher education (Md=3.00),  $U=65552$ ,  $z=-2.73$ ,  $p=.006$ ,  $r=-0.10$ .

There were significant differences between educational levels of the other parent/guardians of children. Internal motivation of children's PA differed significantly between parents with lower education (Md=4.33) and parents with higher education (Md=4.50),  $U=55201$ ,  $z=-2.12$ ,  $p=0.034$ ,  $r=-0.08$ . Indirect outcomes of children's PA differed significantly between parents with lower education (Md=4.00) and parents with higher education (Md=4.00),  $U=57700$ ,  $z=-2.36$ ,  $p=0.018$ ,  $r=-0.09$ . Future outcomes of children's PA did not differ significantly between parents with lower education (3.00) and parents with higher education (Md=3.00),  $U=62307$ ,  $z=-0.101$ ,  $p=0.920$ ,  $r=-0.04$ .

Internal motivation of children's PA did not differ significantly between parents who had money enough to buy clothes and food (Md=4.50) and parents who didn't have money enough (Md=4.33),  $U=16079$ ,  $z=-1.67$ ,  $p=.10$ ,  $r=-0.06$ . Indirect outcomes of children's PA did not differ significantly between parents who had money enough to buy clothes and food (Md=4.00) and parents who didn't have money enough (Md=4.00),  $U=19321$ ,  $z=-0.01$ ,  $p=.99$ ,  $r=-0.00$ . Future outcomes of children's PA did not differ significantly between parents who had money enough to buy clothes and food (Md=3.00) and parents who didn't have money enough (Md=3.00),  $U=18653$ ,  $z=-0.04$ ,  $p=.97$ ,  $r=-0.00$ .

Kruskal Wallis test showed that there was a statistically significant difference between the three different household income groups, related to internal motivation of children's PA ( $\chi^2(2) = 15.49$ ,  $p = .000$ ). Parents with higher income showed to value more factors relating to internal motivation of children's PA. There were not statistically significant differences between the three household income groups related to indirect outcomes of children's PA:  $\chi^2(2)=5.61$ ,  $p=.060$ ). There was a statistically significant difference between the different income groups and valuing future outcomes of children's PA  $\chi^2(2)=6.12$ ,  $p=.047$ . Parents from the middle income group valued highest future outcomes of children's PA, then high-income parents and lower income parents valued lowest.

Kruskal Wallis test showed no statistically significant differences between parents who had or didn't have problems with paying their bills and valuing internal motivation of children's PA,  $\chi^2(2)=1.46$ ,  $p=.482$ . Indirect outcomes of children's PA did not differ significantly between parents

who had or didn't have any problems with paying their bills,  $\chi^2(2)=0.45$ ,  $p=.798$ . Valuing future outcomes of children's PA did not differ significantly between parents who had or didn't have any problems with paying their bills,  $\chi^2(2)=1.08$ ,  $p=.584$ .

## 7. DISCUSSION

The aim of this study was to examine associations between family socioeconomic background and parents' attitudes towards child PA. Associations between family socioeconomic background and 10-11 – year old children's PA levels during leisure time and school time were studied as well. Cross-sectional data collected by Folkhälsan as part of the Hälsoverkstaden study during autumn 2006 gave a great possibility to study these associations among 812 Swedish speaking child-parent pairs in the area of Uusimaa in Southern Finland. The family socioeconomic background was examined by the educational level of parents, the household income, if parents had difficulties to pay their bills and through asking parents to report how often they had money enough to buy clothes and food for them selves and for their family. Parents' attitudes towards child PA were investigated by asking parents to value statements related to child PA in a five-item scale. Children's PA levels were examined through self-reported PA duration and frequency during school and leisure time. The main findings of the study are first presented, followed by a discussion about the associations found. Under heading method discussion, the strengths and limitations of the study are discussed. Finally, suggestions for future studies and implications of our findings are presented.

### 7.1. Main findings

The main findings of this study were that the family socioeconomic background was associated both with parents' attitudes towards child's PA and with children's PA levels. Results showed that child's PA levels varied by the socioeconomic background of their parents: higher educational level of respondent parents was associated with children's higher leisure time PA levels. As well, higher household income level was related to higher PA levels of children during leisure time. Results showed that parents' attitudes toward child's PA differed between parents from different family socioeconomic backgrounds. The founded differences were; educational level of parents and low household income were associated with indirect outcomes of child PA. High household income and high education from the other parent were associated with internal motivation of child PA. The discussion will focus on these major findings and relate them to results from previous studies.

## 7.2. Family socioeconomic background and child PA

As hypothesized and in a line with previous research, family socioeconomic background was associated with children's PA levels: children's levels of high PA (both duration and frequency) during leisure time were associated positively with respondent parents' education and with high household income level. The positive association between high family socioeconomic background and children's self-reported PA during leisure time is in line with the results obtained in previous studies (Jimenez- Pavon et al. 2012, Lehto et al. 2009, Hanson & Chen 2007, Kantomaa et al. 2007, Raudsepp 2006, Kristjansdottir & Vilhjalmsson 2001, Gordon-Larsen et al. 2000). In today's world most of children's PA occurs in organized sports. A present Finnish report showed that children's participation in organized sports might be too expensive for two third of Finnish families which results in that many children do not have the possibility to be PA in organized sports (Puronaho 2014). Children's participation in organized sports is often dependent on their parents' economical resources and on their attitudes and values towards PA (ibid.). Previous findings have stated that parents' socioeconomic background is more related to organized activities than it is related to non-organized activities (Santos et al. 2004). Further, it has been found that children from families with higher socioeconomic status chose more organized activities compared to children from families with lower socioeconomic background (ibid.). The increased and high fees for participations organized activities can be major reason for the differences in children's PA levels in leisure time found in the present study as well.

High family income has been found by previous studies to be a stronger determinant for participation in organized sports than parents' level of education (Kantomaa et al. 2007). In the present study, only the respondent parents' education was positively associated with children's leisure time PA. The association was somewhat stronger for the frequency on leisure time PA, compared to the association between household income and the frequency of leisure time PA. Therefore, the association was stronger for household income and duration of leisure time PA than for the association between the educational level from respondent parent and leisure time PA duration.

In the present study, the associations between family socioeconomic background and children's PA were studied, in addition to household income, as well by asking parents to report if they had problem to pay their bills and how often they did not have money enough to buy food and clothes to their family. The results showed that children's low PA levels during leisure time were associated with having parents with problem to pay their bills and, as well with having parents who didn't

have money enough to buy food and clothes to their family. Children from families where parents rarely or never had money enough to buy food and clothes reported lower frequency for leisure time PA. The high participation fees for organized sport activities might one explaining factor for this finding. Other explaining factors may include unsafe neighborhood: parents may not allow their children to be outside and play or that children don't have access to appropriate PA locations (Holt et al. 2009). It might also be that children receive less social support from their parents and that their parents are not positive role models (Seabra et al. 2012). Previous studies have also found that in families with lower socioeconomic background there are more media available for children and less opportunities for PA were provided (Tandon et al. 2012).

An interesting finding was that any significant association could not be found between the any of the variables describing family socioeconomic background and child PA during school time. This is in line with those previous studies that have measured leisure time PA and school time PA separately (Kristjansdottir & Vilhjalmsson 2001). Possible explanations for this finding might be that being PA during school time is not dependent on any financial factors from parents. In schools there is a great possibility, through positive experiences from physical education, to affect children's PA also during leisure time and reduce socio-demographic differences in children's PA levels. Based on this, there is a need to examine children's PA levels separately during leisure time and school time and consequently get more information about the factors influencing children's PA.

### **7.3. The impact of socioeconomic background for parental attitudes towards child PA**

Parents' attitudes towards child PA are of high importance because studies have shown that parents with positive attitudes tend to have more active children (Edwardson & Gorely 2010, Bois et al. 2005, Tinsley 2003, McGuire et al. 2002). In the previous research higher socioeconomic background have shown to be associated with more positive attitudes towards health in general and towards PA (Seabra et al. 2012, Raudsepp 2006, Bois et al. 2005). Based on this it was hypothesized and expected that parents with different socioeconomic background would value children's PA differently in the present study. However, in the previous studies parents' attitudes have been studied by asking parents to give the importance of child PA or value the importance of children's competence in PA. In the present study parents attitudes towards child PA were investigated through 13 statements to get a wider picture about how parents valued child PA according to their socioeconomic background.

The results of this study showed that high household income level was associated with internal mo-

tivation of child PA: parents with high household income gave a higher importance for that children's physical health improves and maintains, that parents encourage children to be PA, that children have fun in organized sports, that children enjoy of being PA and that children develop skills for PA. Also the high educational level of the other parent/guardian was positively associated with this variable. In previous studies it has been stated that parents with high educational level may have better knowledge of the importance of PA and about the health enhancing outcomes of PA (Lynch & Kaplan 2000). It is well noticed that high income gives better opportunities to be PA: access to facilities, equipment, and recreational areas and for participation in organized sports (Gordon-Larsen et al. 2006, Duncan et al. 2002). Previous studies have shown that children from families with high family income have a higher participation in organized PA (Kantomaa et al. 2007, Santos et al. 2004). It has also been shown that parents with high socioeconomic background encourage more their children to be PA than do parents from lower socioeconomic background (Edwardson & Gorely 2006). It might be that due to the high socioeconomic background of parents, they have better possibilities to enroll their child into organized sports and they are aware about the positive effects children will gain from participating in these activities. It has been stated by previous research that parents with high socioeconomic background are more active than parents with lower socioeconomic background (Edwardson & Gorely 2010). This might explain why they value higher children's PA as well. Previous research has stated that parents with higher incomes and educational levels have more positive attitudes both towards the value of PA during leisure time and for higher PA levels (Bois et al. 2005). Also the fact that healthy lifestyle and being PA is highly socially valued among people with higher socioeconomic background may explain why the internal motivation of child PA was positively associated with high socioeconomic background of parents.

It was an interesting finding that indirect outcomes of child PA were negatively associated with educational level from both parents and with the household income. The variable of indirect outcomes consisted of statements regarding to social outcomes of child PA, including statements that children learn how to work together with other children, that children has energy to concentrate better at school, that children makes friends, and that PA keep children away from harms. Any support for this finding could not be found for the previous research. It seems that family socioeconomic background influence what parent's value regarding to child PA. It can be that parents with lower socioeconomic background don't value the physical outcomes of PA as strongly as parents with higher socioeconomic background due to lack of knowledge. It might also be that parents with lower socioeconomic background wish that their children would have more possibilities to be PA in

organized sports because know that these activities would be good for children, but they don't have economical possibilities to offer these activities to their children.

#### **7.4. Methodological considerations**

Quantitative data was used to study possible associations between the family socioeconomic background and child PA, and between family socioeconomic background and parents' attitudes towards child PA. Because of the cross-sectional design of this study, any conclusions about the causality between the variables were not possible to draw; only the possible associations were examined.

The major limitations of this study are related to the study group, because the studied population was not a representative cross-section of Finnish families with primary school children, and therefore the results of this study are not generalizable to a larger population. The study results present quite well the population of the capital region, but not other parts of Finland: the collected data was from the county of Uusimaa, where high education and high economic status are more common than in the general Finnish population, which gives support that the studied parents were somewhat selected. The study population was selected also because the participating children came from Swedish-speaking schools only, and represents therefore a language minority in the capital area. Moreover, in general, the Swedish-speaking population in the capital area is quite a homogeny and has a high socioeconomic status.

In the Hälsoverkstaden study not all of the invited schools decide to participate in the study. It can be that those schools that took part in the study valued more health and health related behaviors and supported children's health behaviors, compared to schools that decided not to take part.

It is of worth discussing if the participated parents and children had more positive attitudes and higher PA levels than those who chose not to participate. Usually, people who participate in such studies use to be more health conscious, have healthier behavior and have a higher socioeconomic background, compared to those who do not participate. Because of the participated parents were to some extent selected it can be that the PA levels of children were somewhat higher than in the general population. If there had been more variation in the study population, it would have been expected that more variation in parents' attitudes towards child PA and in children's PA levels would have existed and the associations found would have been stronger.

The data material relating to child PA levels was self-reported; this can be seen both as strength and as a limitation (Trost 2007). Several studies have used similar questions for children at the same age, which support that children at the age of 11 year are able to report their own health behavior (Currie et al. 2012). Children were asked to report their duration and frequency of PA during leisure time and during school time in a week. This raises concerns of reliability and validity due to memory bias, because it can be that participants do not remember their activity levels truthfully. For example, an over-reporting of PA can occur when children are asked to report the entire duration of PA in leisure time, which includes activities in organized PA, and they might forget that there is always time for waiting, sitting and standing. It might also be that children underestimate their PA duration when they are playing free outside of organized PA. Further, social desirability (Klesges et al., 2004) needs to be taken into account, because this might have resulted in that children over-reported their PA levels, and consequently the number of inactive children may actually be higher. The results might have been different if the PA levels of children would have been measured objectively. Further, it is difficult to compare findings between previous studies because in many studies the way of measuring, whether data was self-reported or not, sample size, age range, instrumentation, and analytical approaches has varied (Trost & Loprinzi 2001).

One of the strengths of the present study was that children's PA levels were measured by asking both duration and frequency, both during school time and during leisure time. This gave more information and a possibility to examine associations between family socioeconomic background and school time PA. In many previous studies a measure of total PA level has been used.

In this study leisure time PA variable included PA in organized sports and free time play, it would have been interesting to study those separately too see if the associations would between socioeconomic background of the family and children's participation in organized sports would have been even stronger. Any information about the intensity of PA was not obtained, which is also important to achieve the health enhancing effects of PA. It would have been interesting to examine if there were any differences between the intensity of PA relating to the socioeconomic background of children's family.

In this study the data material was used from Hälsoverkstaden study project, where the data was collected during autumn. In Finland, there are seasonal variations in whether, which can affect the PA levels of children and it might be that the results would have been different if the data had

been collected in some other point of the year. Although in this study children were asked to estimate and report their PA levels in general, not specifically during some season of the year.

One of the strengths in this study is the use of several variables describing the family socioeconomic background. These variables included parents' educational level, household income, and parents' possibility to pay their bills and how often they had money enough to buy clothes and food for themselves and for the family. The data used for these variables were collected from parents because of the young age of children. This made the data more reliable. One of the strength is also that information from both parents education was obtained.

Information about attitudes of parents relating to child PA was collected from parents. One of the strengths of this study was that the variable of parental attitudes towards child PA consisted of 13 statements related to child PA. In many previous studies parental attitudes have been measured with only one or two question (Bois et al. 2005, Tinsley 2003, McGuire et al. 2002). The variables for parental attitudes toward child PA was formed based on the answers from one parent, by the one who filled out the questionnaire and mothers were the ones who filled majority of the questionnaires. It might be that the attitudes of parents differ and the one who filled the questionnaire was more interested in the topic and had more positive attitudes towards child PA, which might have affected the results.

The issue of social desirability also needs to be taken into account, because parents might have given answers according to what they think is appropriate and expected from them. In this study only questions about parents' attitudes toward child PA were chosen from the questionnaire, but in the Hälsoverkstaden study, parents were also asked to report their practices related to child's PA (whether they are active together and so on), it might be that moral difficulties rose when they were asked about both attitudes and practices: to concede that you have not act according to something you value and have positive attitudes towards can be difficult and impact the results (Stenhammar et al. 2007).

## 8. CONCLUSIONS

This study showed that children's leisure time PA levels were associated with their family socioeconomic background. According to the findings it seems that the socioeconomic background of the family influence how parents value children's PA. Based on this study it is recommended that future practical interventions should be targeted to special groups so that leisure time PA is promoted according to family socioeconomic background. Children's PA is worth to promote during school time because according to findings from the present study, family socioeconomic background was not associated with children's PA during school time.

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