Secular Trends in Youth Physical Activity and Parents’ Socioeconomic Status From 1977 to 2005

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The aim of this study was to investigate the relationship between youth physical activity and family socioeconomic status (FSES) over 28 years. As a part of the Finnish Adolescent Health and Lifestyle Survey a random sample of 12-, 15- and 18-year-old boys and girls participated in a nation-wide survey by answering questions every second year, from 1977 to 2005, on, among other things, leisure time physical activity and sport participation. Father’s education represented FSES. The results showed that there were no significant or only small differences between the high and low FSES groups in unorganised physical activity during the study period. Participation in physical activities organized by the school was not associated with FSES. Participation in youth sport organized by sport clubs was strongly associated with FSES in both sexes. The young people in the high FSES groups participated more than those in the low FSES groups. It was concluded that considerable inequality exists in youth sport participation, that this inequality has been growing during the last decade, and that it is bigger among girls than among boys.

Physical activity in children and adolescents has been seen to be important for the healthy development and growth of young people. It has also been shown that physical activity in childhood and adolescence predicts physical activity in adulthood and thus may influence the health of large populations (1,6,30,32,35).
Promoting physical activity and a life-long healthy lifestyle is one of the main aims of physical education in many countries (2). To be able to promote physical activity among children and adolescents it is important to know the factors which influence and regulate physical activity among young people. Among the correlates or determinants of youth physical activity, family, particularly family socioeconomic status (FSES) has been found to be an important predictor in many countries. The socioeconomic status of a family represents both the cultural and economic capital of the home, which means on the one hand factors enhancing social learning and socialization and on the other factors enabling participation in different activities regardless of cost. The influence of FSES is increased by the fact that parents’ physical activity, which is an important socializing factor, correlates with it (22,36,37).

Physical activity and sport participation in young people have been found to be associated with parents’ SES in many studies but not wholly consistently. For example, the review by Sallis & al (25) lists studies, mainly conducted in the USA, where no relationship has been reported. A Canadian 34-study review concluded that there were not enough studies to conclusions to be drawn about the effect of FSES. However, a recent study from the USA shows that leisure-time inactivity was highest among participants from a lower social class (19). A further example of the significance of cultural background is given in a study carried out in Turkey showing that girls from low SES families participated in physical activity more than girls from high SES families (14). In addition to possible cross-cultural differences the relationship may also depend on the method used to measure socioeconomic status. The most common indicators of FSES have been occupational status of parents, education of parents, and indicators of family affluence or wealth. In some countries the method has been to divide children into those who are eligible for free school meals and those who are not.

The results of the studies carried out in European countries have concluded rather consistently that FSES is an important determinant of young people’s physical activity and sport participation. In the HBSC survey of 1987–1988 three measures of FSES were used. The family affluence scale (FAS) included the number of cars owned by the family, whether the child had his/her own bedroom, and the number of holidays taken by the family. The wealth of the family was measured by asking young people “how well off” they thought their families were on a five-point rating scale. The third measure was fathers’ and mothers’ occupational status. The results for ten European countries showed a significant but very low (0.05–0.10) correlation between FAS and children’s physical activity in four countries, medium (0.10–0.20) correlation, also in four countries, and no correlation in one country. Family wealth had low significant correlation with physical activity in six countries, medium correlation in two countries, and no correlation in two countries. Father’s occupational status had a significant relationship with physical activity in only four countries, a very weak relationship in two countries and a medium relationship in two countries (20). The results show that the relationship between FSES and children’s PA depends quite heavily on the method used to measure FSES. The affluence and wealth of the family are more important than father’s occupational status. The family income is the most important part of the family affluence. According to the Statistics Finland the income inequality remained same in 1980s and grew from 1991 to 2001 but not much any more after
2001. In European comparison Finland belong to the counties of low or moderate income inequality according to GINI-coefficient. However, the income equality may be an important factor in relations to young people’s sport participation.

The importance of family affluence for children’s physical activity was supported by the results of a recent HBSC survey. In 2001–2002, the FAS was measured again. The number of home computers was added to the affluence scale. The FAS correlated significantly with physical activity by young people of at least 60 min. in total on a period of 4–7 days in 22 out of 28 countries among boys and in 26 countries among girls (11).

Many other studies have reported a positive relationship between FSES and children’s physical activity and sport participation (1,5,8,10,15,18,22,23,26,28,30, 34,37).

Great changes have taken place in European societies on past few decades. Some countries have changed from a centralised socialist economy to an free market one, and in all countries the influence of commerce and economic competition has become more prominent. In addition, lifestyles and leisure time activities have adopted new forms, content and meanings. The world of sport and physical activities have also been changing all the time, as can be seen in the numerous new sports and activities, which are also available to more and more people. At the same time in many countries the number of young people participating in organized sport has increased (4). It might be expected that these changes would also affect the socialisation situations and environments of physical activity. There is some evidence for a possible leveling of the influence of FSES on youth physical activity (9). However, this is rather old finding and only partly supported by more recent studies. A Scottish study found no change in the relationship between parents’ socioeconomic status and 11–15-year-old children’s physical activity from 1990 to 2002. Vigorous physical activity was consistently lower among the lower SES than higher SES groups. Measurements were repeated at four-year intervals (12). A Belgian study reported a significant relationship between non/moderate leisure time sport activity and FSES (more in lower status groups) among boys in 1969 and 1999, but not in 1989, and among girls in 1979, 1989, and 1999. Participation in club-organized sports was associated with FSES among boys in 1969 but not in 1989 and 1999, and among girls in 1979, 1989, and 1999, indicating a leveling off of the influence of FSES in boys but not in girls (27).

The aim of this study was to investigate the relationship between youth physical activity and parental socioeconomic status over a period of 28 years. The relationship between physical activity and socioeconomic status is analyzed in age-gender groups and separately for unorganized leisure time physical activity, organized sport, and vigorous physical activity.

Methods

Participants

The data were collected from 1977 onwards in the connection with Finnish Adolescent Health and Lifestyle Survey which is nation-wide survey of adolescent health-related lifestyles in Finland conducted every second year by structured and self-administered questionnaires, and which is mailed in February with two rein-
The numbers of participants varied from 2832 to 8390. The response rates were higher among girls than boys, and in younger groups than in older groups. During the first surveys of 1977–1981 the response rates were 90% in girls and over 80% in boys. However, thereafter they declined, particularly after 2000, and were, for example, in 2005 58% for boys and 73% for girls.

Because non respondents may differ from respondents, the effect of nonresponse was studied by comparing the physical activity of those who responded to the first mailing with those who responded to first and second reminders, respectively. It was suggested that the later they had responded the more they resembled the nonrespondents. No significant differences were found in the means of organized sport between the three response times. The means of unorganized sport were higher in the group responding to the third reminder than in the groups responding to the first mailing or the second reminder. It can be concluded that the data based on the lower response rates probably are as representative as the data based on the high response rates (24).

Measurement of Physical Activity

In 1977–1989 participation in leisure time physical activity (LTPA) was measured through four questions: How often do you participate in sport or recreational physical activity during your leisure time? (1) in a school sport club (outside PE lessons); (2) in a sport club outside school; (3) in some other club or association, and (4) informally, alone or with your friends. Each item was answered on a 7-point rating scale: 1 = not at all, 2= less than once a month, 3= 1–2 times per month, 4= about once a week, 5= 2–3 times a week, 6= 4–5 times a week, 7 = about every day. From 1991 onwards the items school sport club and other clubs were omitted. To formulate a combined variable for physical activity frequency, the item informal or unorganized physical activity (UNORGPA) was recoded to a 4-point Likert scale: 1 = less than once a week, 2 = once a week, 3 = 2 to 3 times/week, and 4 = more than 3 times a week. Three items of organized physical activity (ORGPA) were combined and recoded using the same four-point scale so that the highest frequency among the three items was the new score for the new variable. From 1991 onwards only one item was included for organized sport which was also recoded on the same four-point scale. The two variables, UNORGPA and ORGPA were cross-tabulated to obtain the final variable for the frequency of physical activity (FREQPA), which was scored in four categories: Inactive, occasionally active, active and very active (17).

From 1979 onwards participants were also asked their perceived intensity of physical activity: how much breathlessness and sweating do you experience when you engage in physical activity? The response categories were: (1) not at all, (2) a little, (3) moderately, and (4) a lot. A variable of intensive physical activity (INTPA) was formed by cross-tabulating FREQPA and perceived intensity of physical activity. The result was a 5-point Likert scale: 1 = inactive, 2 = light
physical activity more than 3 times a week, 3 = sporadic intensive activity, 4 = intensive activity more than 3 times a week, 5 = intensive activity about daily. Categories 4 and 5 were interpreted to represent moderate-vigorous physical activity (MVPA; 21).

To study the reproducibility of the physical activity measurement the inquiry was repeated after an interval of several weeks in 1993, 1995, 1997, 2001 and 2003. The correlation coefficients in the whole sample \( (N = 1850) \) pooled over years were 0.80 for ORGPA, 0.66 for UNORGPA, and 0.65 for INTPA. There were no notable gender or age differences in the correlations. The test-retest correlation of INTPA for the whole data were 0.65. The correlation for boys was 0.67 and for girls 0.62. Thus, the test-retest reliability of the physical activity measurements can be judged to be rather good. Self-report instruments measuring physical activity may be sensitive to social desirability causing over estimation of activity which should be taken into account when looking the levels of physical activity. In this study the focus is in the differences between FSES groups. We have no evidence for that the social desirability is different between FSES groups, but it may be possible.

Father’s education was used as a measure of family socioeconomic status (FSES). It has been found earlier that father’s SES correlates better with children’s physical activity than mother’s SES, and that father’s education represents FSES better than father’s occupational status (37). Father’s education was classified into 3 categories: Low = 9 years of compulsory schooling or less, Medium = compulsory schooling + vocational school, and High = graduated from high school.

Statistics

In the tables and figures the sport participation rates are illustrated in percentages. In the analyses of variance the original or combined scores for participation have been used (UNORGPA 1–4, ORGPA 1–4, INTPA 1–5). ANOVA was used to analyze the main effects and interactions of time, FSES, age and gender in the pooled data. Because a small change was made in the method of measurement between 1989 and 1991, the analyses of variance were carried out separately for the period 1977–1989 and the period 1991–2005.

Results

Among boys there was a small but significant difference in UNORGPA between the high and low levels of father’s education in both study periods (1977–1989: \( p < .029 \), 1991–2005: \( p < .035 \)), but not among girls (Figures 1 and 2). High FSES boys participated more in unorganised physical activity than low FSES boys. In 2005 78.5% of low FSES boys and 83.2% of high FSES boys participated in UNORGPA at least once a week. The gender x FSES and age x FSES interactions were not significant.

There were clear and very significant differences between high and low FSES boys and girls in ORGPA in both study periods \( (p < .000; \) Figures 1 and 2). In 2005 46.0% of low FSES boys and 56.7% of high FSES boys participated in ORGPA at least once a week. Among girls the respective numbers were 34.9%
and 50.0%. The interaction FSES x years was significant during the second period both among boys ($p < .009$) and among girls ($p < .004$), indicating that differences in sport participation between the FSES groups had increased from 1991 to 2005. Among boys the FSES x years interaction was significant also during the first period ($p < .014$), showing increasing differences from 1977 to 1989. The FSES x age interactions were not significant showing that the influence of father’s education was independent of the child’s age. The FSES x gender interaction was significant both during the first study period ($p < .006$) and during the second one ($p < .034$). Father’s education showed more influence on girls’ than boys’ sport participation.

One form of organized physical activity available to young people is that provided by noncompetitive school sports clubs. These kinds of clubs were common in 1970s and 1980s than today. During 1977–1989 the questionnaire included the item participation in a school club. No significant differences emerged between children from the different FSES groups in participation in school sport clubs.

**Figure 1** — Boys’ participation in organized (ORGPA) and unorganized (UNORGPA) leisure time physical activity at least once a week by family socioeconomic status (FSES) %.

**Figure 2** — Girls’ participation in organized (ORGPA) and unorganized (UNORGPA) leisure time physical activity at least once a week by family socioeconomic status (FSES) %.
Engagement in frequent moderate-vigorous physical activity was significantly higher in boys and girls from the upper than the lower FSES groups throughout the study period ($p < .000$). (Figures 3 and 4). The time x FSES interaction was not significant. The FSES differences have been same throughout the study period, and were the same for both sexes, as was shown by the nonsignificant gender x FSES interaction.

**Discussion**

The main results of this study were that participation in organized youth sport and MVPA has consistently been higher among children from the upper than lower FSES groups, and that the difference between FSES groups in participation has increased during the past decade. The differences between the FSES groups in unorganised physical activities and extracurricular sports were small or nonsignificant. Because the study design was cross-sectional it is not quite correct draw conclusions on causal

**Figure 3** — Boys’ participation in moderate to vigorous leisure time physical activity (MVPA) by Family socioeconomic status (FSES).

**Figure 4** — Girls’ participation in moderate to vigorous leisure time physical activity (MVPA) by Family socioeconomic status (FSES).
relationships. However, because we know that children’s physical activity does not affect father’s education, and considering that there are also other determinants of young people’s physical activity, we take a liberty to use the word “influence” when speaking about the importance of FSES for the physical activity of young people.

Social inequality in participation in physical activity and sport has been well documented in many Western countries. What the current study shows, however, is the persistence of this inequality on the long term, and furthermore that it has increased during the last decade. Although much research has been conducted on the relationship between family SES and children’s physical activity, research on the stability of or possible changes in this relationship during past few decades is very scarce. Our results support the findings of previous studies from Scotland (12) and Belgium (27) indicating that differences in youth sport participation between FSES groups have remained, and that there is no evidence for the leveling of such differences. In addition, our study gives new information indicating not only that social inequality in children’s physical activity has existed 28 years but also that it has increased during the last decade.

Among girls there were no FSES differences in unorganised sports. Also among boys the differences in unorganised physical activity between the FSES groups were small and much smaller than the differences in organized sport. There were no differences between the FSES groups in participation in school sport clubs either among boys or girls. Thus, the social inequality in question mostly concerns participation in modern youth sport, which our variable ORGPA mainly reflects during the second study period. Youth sport in Finland is mainly organized by sport clubs, which in turn belong to national sport federations. Participation in youth sport has increased in Finland during the past few decades and an upward trend can be seen in all the FSES groups; however the greatest increase is shown by the highest group. At the same time as sport clubs have recruited more young people, participation has become more expensive in many sport events. Youth sport organized by sport federations and sport clubs is rather competitive which increases the need for good facilities and equipments, and thus resources.

The result that family social status strongly influenced children’s participation in youth sport but not at all or very little their participation in school sport clubs or in unorganised physical activities emphasizes the importance of young people’s own spontaneous activities and noncompetitive activities organized by schools. In England, Wales and Belgium it has also been found that social class had no or only a minimal effect on adolescents’ participation in extracurricular sport, although young people’s FSES has been shown to be associated with general physical activity or with club-organized sports (5,10,27,29). In Finland school sport clubs almost disappeared about twenty years ago due to financial problems. Nowadays attempts have been made to compensate the loss of these clubs by organizing physical activities in “whole day school” projects or in afternoon programs which, however, only concern the youngest children. In Finland the share of unorganised spontaneous activities in youth physical activity remains higher than in many other countries, although the share of organized activities is increasing (16,31). The trend for youth physical activity to become more and more organized by sport clubs means at the same time an increase in social inequality in participation in organized physical activity. It is therefore, important to offer young people good possibilities for spontaneous physical activity and sports. An
example one measure taken to improve spontaneous physical activity is the plan
to increase free access to open fields and playing courts and other facilities close
to residential areas. A noteworthy way of increasing participation of working class
young people in LTPA is the City Sport Program introduced and studied in
Norway. The research data indicate that the City Sport Program has proved more
attractive to working class young people than conventional sport (28).

The gender differences in youth sport participation found in most countries
where youth sport is organized can be seen also as an inequality issue. The influ-
ence of family social status increases this problem in boys and girls but among
girls the influence of FSES was stronger than among boys, thus increasing the
inequality problem in girls. When the FSES difference in sport participation is
added to the general difference between boys and girls we find that, for example,
in 2005 56.7% of high FSES boys participated in organized sport while the par-
ticipation rate among low FSES girls was only 34.9%. This result is in the line
with the Belgian finding that differences in youth sport participation between
FSES groups were notable in girls in all measurements while among boys no such
differences existed in 1989 and 1999 (27).

Older children might be expected to be more independent of their family and
its socioeconomic status than younger children. Our results showed that the influ-
ence of father’s education was similar across the different age groups. The differ-
ences between FSES groups were similar in all age groups. It may be that although
older adolescents are socially and psychologically more independent of the family
than younger ones but sport participation for them may be even more expensive
than participation at younger age, resulting in continuous economic dependence
on the family among older adolescents.

Several reliable longitudinal studies have shown that physical activity and
sport participation in childhood and adolescence predicts physical activity in
adulthood although the correlations are low (1,6,30,32,35). Participation in orga-
nized youth sport, and in particular sustained participation has been found to be
better predictor of adult physical activity than general physical activity (33). Thus,
differences in youth sport participation at a young age are reflected in differences
in adult physical activity. Inequality in youth sport participation enhances inequal-
ity in adult physical activity and also in public health.

How the socioeconomic status of the family is related to children’s physical
activity was not a topic of the current study. From the perspective of future studies
it can be stated first that social class is an environmental factor which may have a
positive or negative influence on adolescents’ participation in physical activity (7).
By the term environment is meant the fact that socioeconomic status is associated
with various psychological, social, cultural and financial factors, including the
child’s living environment, of which all may enhance or limit children’s and ado-
lescents’ physical activity. Dagkas & Stathi (3) summarized the psychosocial and
environmental factors which are associated with social class and which influence
adolescents’ leisure-time physical activity as type of school, location of residence,
proximity of facilities, financial support and encouragement and motivation from
significant others. Very important is also the logistic support from parents. Espe-
cially the facilities for organized sports are often located far from home and there-
fore transportation is needed. Thus, in seeking to decrease FSES differences con-
sideration should be given all of these factors and all of them should be included
to the investigation. Simply providing more evidence that FSES is related to children’s physical activity is no longer enough. All the above mentioned factors may also be related with physical activity among young people in Finland. From what we know about the Finnish youth sport and parents, financial issues and parental psycho-social influence would seem to be particularly important factors.

The strengths of this study are the long study time, 28 years, the use of a large random sample including three age cohorts, and the representativeness of the sample of Finnish boys and girls. The instrument measuring physical activity was the same throughout the 28 years, with exception of a minor change introduced in 1991. Although the size of the change seemed to be rather small, all the statistical tests were carried out separately in 1977–1989 and 1991–2005. The reliability of the physical activity measures estimated by the test-retest method was rather good. A limitation of the study is that the measurement of physical activity was focused only on the leisure time physical activity, and not total physical activity or energy expenditure. However, leisure time physical activity is an important part of the total physical activity of young people, not only with respect to energy expenditure and health but also to psycho-social well-being.

As far as the ecological validity of our study is concerned we need to remember the likelihood of cross-cultural differences in how youth sport is organized, in the possibilities and facilities offered by different countries, and in parents’ attitudes toward and participation in their children’s sport. Finnish youth sport is rather competitive. More children in Finland reported that a physically active mother and father than children in many other countries (13). However, bearing in mind the abundant evidence on the relationship between FSES and children’s physical activity in the literature, we can conclude that inequality in physical activity and sport participation is a situation that prevails in many countries. It may be peculiar to Finland that the relationship is particularly strong in youth sport participation, and that in Finland good opportunities exist for young people to participate in spontaneous activities and thus their unorganised physical activity does not depend or depends only a small extent on FSES. Taking into account the globalisation in sports, it is likely that the differences in participation in physical activity between FSES groups may have been growing also in other countries as well, although the Scottish study did not report an increasing gap.

**Conclusions**

A significant and notable difference in youth sport participation between children from families with high and those from families with low socioeconomic status families has been the case for 28 years in Finland and the difference has grown during the past decade. This indicates growing inequality between children from different social classes, and therefore special attention should be paid to young people’s opportunities to participate in organized youth sport. Social inequality was much smaller or non existent in sport organized by schools and in young people’s spontaneous physical activities. For these reasons a wide range of extracurricular physical activities should be provided by schools and more opportunities made available for self-organized activities close to residential areas. The opportunities should be offered in such a way that they are accessible by low-SES families, e.g., out-of-school-hours care for working single parents, summer camps, free bussing to and from activity areas.
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References


