

## Changes from 1986 to 2006 in reasons for liking leisure-time physical activity among adolescents

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Reasons for participating in physical activity (PA) may have changed in accordance with the general modernization of society. The aim is to examine changes in self-reported reasons for liking leisure-time physical activity (LTPA) and their association with self-reported LTPA over a 20-year period. Data were collected among nationally representative samples of 13-year-olds in Finland, Norway, and Wales in 1986 and 2006 ( $N = 9252$ ) as part of the WHO cross-national Health Behaviour in School-aged Children (HBSC) study. Univariate ANOVAs to establish differences according to gender, year, and country were conducted. In all countries, 13-year-olds in

2006 tended to report higher importance in terms of achievement and social reasons than their counterparts in 1986, while changes in health reasons were minor. These reasons were associated with LTPA in a similar way at both time points. Health reasons for liking LTPA were considered most important, and were the strongest predictor of LTPA. The findings seem robust as they were consistent across countries and genders. Health education constitutes the most viable strategy for promoting adolescents' motivation for PA, and interventions and educational efforts could be improved by an increased focus on LTPA and sport as a social activity.

Physical activity (PA), exercise, and sport have many important health benefits for children and adolescents (Janssen & LeBlanc, 2010; Biddle & Asare, 2011; Ekelund et al., 2011). While there is no consistent evidence that leisure-time physical activity (LTPA) levels among adolescents have declined during the past decades (Samdal et al., 2007; Guinhouya et al., 2013), several studies using objective measurements (accelerometers) suggest that only about half of adolescents meet the PA recommendation of 60-min moderate-to-vigorous activity per day (Guinhouya et al., 2013). With self-reported data, the prevalence is even lower, 24% among 13-year-old boys and 13% among girls (Currie et al., 2012). Thus, low levels of adolescent PA continue to constitute a major public health concern, pointing to the need for efforts to increase adolescent PA levels. Motivation is a major determinant of adolescent LTPA (Biddle & Asare, 2011; Biddle et al., 2011), and therefore one of the most important factors at the individual level. Several studies have concluded that adolescents are motivated to take part in PA for diverse reasons, in particular achievement (e.g., mastering skills, improving competence, and achieving good results), health (e.g., becoming fit and increasing well-being), and social (e.g.,

making or meeting friends and belonging to a group) reasons (Wold & Kannas, 1993; Stuntz & Weiss, 2010; Iannotti et al., 2013; Pannekoek et al., 2013). The present study aims at comparing changes in achievement, health, and social reasons for liking LTPA, and changes in associations between these reasons and LTPA across three Western European countries (Finland, Norway, and Wales) over a 20-year period. The focus is on LTPA because adolescents can choose to participate in such activities themselves, and their views on LTPA are likely to be more apparent and motivating than, for example, on physical education (PE) or other PA during school hours.

Reasons for liking LTPA indicate positive attitudes to LTPA, and are therefore expected to be related to higher motivation and intentions to engage in LTPA, and subsequently to undertake LTPA (Plotnikoff et al., 2013). Motivation and attitudes for LTPA may have changed in accordance with the general modernization of society (Inglehart, 2008). Sport is one of a number of expanding leisure industries that are assuming increasing importance in modern and developing economies (Sturm, 2004). This expansion is also reflected in the increased media attention to sports, such as the growing number of

TV channels devoted entirely to sports, as well as new technological developments such as the webcasting of sports events, i.e., media presentations distributed over the Internet using streaming media technology. Such developments may result in an increased interest in sports without direct participation.

At the same time, informal sports have become increasingly central to the PA and cultural lifestyles of young people, and a considerable part of current “sports” activity is not organized, nor conducted in official clubs, but is spontaneous in nature (Gilchrist & Wheaton, 2011). The emergence of the urban-based lifestyle sport parkour, also called free running or art de déplacement, is an example of a more diversified sports landscape (Gilchrist & Wheaton, 2011). Parkour has spread rapidly among young urban inner-city populations, though informal networks, Internet forums, and particularly its virtual presence on sites such as YouTube. The participants see parkour as a noncompetitive activity; they challenge themselves and their level of skill, and they do not compete against others. This type of lifestyle sports seems to reflect the increased value placed on self-expression in modernization (Inglehart, 2008). Moreover, in their qualitative study among parkour participants (so-called traceurs), Gilchrist and Wheaton (2011) observed informal but extremely strong networks, and they suggest that these networks are based on strong social ties between similar people with relations, reciprocity, and trust based on ties of familiarity and closeness. This finding suggests that both achievement and social reasons are important for participation in such modern physical activities, and maybe more so than for traditional sport activities.

As physical activities (and sporting culture in general) have become more diverse, e.g., the number of different types of sport and exercise has dramatically increased, the motives of those who engage in different subgroups of activities (such as skateboarding) may also have become more diverse. The increased societal attention to sports and LTPA probably suggests that these activities are regarded as even more positive, prestigious, and socially desired than some decades ago. Accordingly, adolescents’ views of PA and sports, including their reasons for liking and engaging in these activities, may have changed in terms of an increased approval of achievement, social, and health benefits during recent decades. However, very little is known about changes in reasons for liking LTPA over time, and whether associations between these reasons and participation in LTPA have changed in recent decades. Insight into such changes and how they relate to LTPA may contribute to improvements in health promotion and physical/sports education.

Public health concerns relating to the increased focus on the obesity epidemic have resulted in policy actions and interventions to increase child and adolescent PA in many countries. In Norway, for example, the parliamen-

tary white paper, Proposition No. 16 (2002–2003), aimed to increase the proportion of children and youth in Norway who participate in at least 60 min of PA daily (Norwegian Ministry of Health, 2003). The determination of the Norwegian government to address population level PA behaviors is demonstrated by the recent publication by the Norwegian Health Directorate of a “Handbook for Physical Activity, guidelines for physical activity as prevention and treatment” (Norwegian Health Directorate, 2009). Similarly, “Creating an Active Wales” (Welsh Assembly Government, 2009), the Welsh Government’s strategic framework for promoting PA, aims to increase the proportions undertaking 60 min or more of PA daily. More specifically, there is a focus on shifting the mean number of days where young people are active at this level from around four to five each week. This is underpinned by the strategic aim to support children and young people to live active lives and become active adults. In Finland, massive PA promotion programs have targeted schools, such as the “Finnish schools on the move” program (Finnish Government, 2012). The media attention and initiatives taken by schools and local communities as a response to such policy statements may have sensitized adolescents to the need for being physically active for health reasons. Consequently, an increase in the importance attached to health reasons for liking LTPA, as well as an increase in LTPA due to health reasons, could be expected.

Boys have generally been found to be more physically active (Samdal et al., 2007; Guinhouya et al., 2013; Kalman et al., 2015) and to report a more achievement-oriented motivation for PA than girls (Wold & Kannas, 1993; Hanrahan & Cerin, 2009). It is possible that the trend toward gender equality in the Western societies (Inglehart, 2008) may result in decreasing gender differences in LTPA and reasons for liking LTPA.

As changes in modern values seem to have been similar in Western European countries such as Finland, Norway, and Wales (Inglehart & Baker, 2000), it is reasonable to expect similar changes in reasons for liking LTPA across these countries. However, these are three different countries with different cultures, including different languages, politics, education systems, gender equality, and structure of leisure-time sport and PA for adolescents. Thus, changes in reasons for liking LTPA may be contextualized according to cultural changes such as transport patterns, school PE curriculum, advancements in technology and electronic entertainment, and sociocultural changes, such as the home environment, roles of family members, the school environment, demographics, and time use (Dollman et al., 2005). It is possible, therefore, that changes in reasons may differ somewhat between countries.

A change in perceived importance of the three types of reasons may also produce changes in how they are related to participation in PA. Hence, if reasons change in a similar way among both genders in the three coun-

Table 1. Sample size and response rate by country, year, and gender

Country	1986			2006		
	Boys <i>n</i>	Girls <i>n</i>	Response %	Boys <i>n</i>	Girls <i>n</i>	Response %
Finland	468	467	89	828	897	90
Norway	612	691	86	824	761	58
Wales	1038	1125	94	755	786	57

tries, their associations with LTPA may also change accordingly. The specific research questions addressed were:

1. To what extent do achievement, health, and social reasons for liking LTPA, and their associations with LTPA, differ between young adolescents in 1986 and 2006?
2. To what extent do changes in reasons for liking LTPA and their associations with LTPA differ between boys and girls, and between adolescents in Finland, Norway, and Wales?

## Methods

The WHO cross-national survey of Health Behaviour among School-aged Children (the HBSC study, <http://www.hbsc.org>) is an international study covering Europe and North America, designed to increase our understanding of health behaviors, lifestyle, and their context among 11-, 13-, and 15-year-olds (Currie et al., 2012). The surveys are currently carried out by an international network of research teams in collaboration with the World Health Organization Regional Office for Europe every 4 years, with each participating country able to combine mandatory questions within selected sections of standardized questionnaires. Questions regarding reasons for liking LTPA were included in three of the countries among 13-year-olds both in the 1985–1986 and 2005–2006 surveys, these time points referred to throughout as 1986 and 2006.

## Sample

Data are from national representative samples of students aged 13 years in Finland, Norway, and Wales in 1986 and 2006. Sample sizes and response rates are displayed in Table 1. Randomly stratified samples were selected, with school class the primary sampling unit (PSU) in Norway. In Finland and Wales, school was the PSU, with a class randomly selected within each year group. Response rates refer to individual level response rates. The Finnish response rate signifies pupil response rate at schools where the headmasters accepted to take part in the survey, while the response rates in Norway and Wales are based on the total number of eligible pupils (in the original sample of schools/classes).

## Measures

LTPA was measured by asking how often students were physically active outside of school hours so much that they get out of breath or sweat, indicating moderate-to-vigorous activity. The students were provided with the following response categories: “never” (0), “less than once a month” (0), “once a month” (0.5), “once a week” (1), “2–3 times a week” (2.5), “4–6 times a week” (5), “every day” (7). The test–retest reliability of this measure of general LTPA has

been found to be acceptable (Booth et al., 2001; Vuori, 2005; Rangul et al., 2008). In addition, the fact that adolescents’ scores on this item were relatively stable in a study in seven European countries from 1986 to 2002 adds to the reliability of the instrument (Samdal et al., 2007). With regard to validity, a simple self-report question of LTPA should not be expected to be highly correlated to overall energy expenditure, but a similar single “sweat” question has been found to correlate well with maximal oxygen uptake (Aarnio et al., 2002).

Reasons for participation in LTPA in 1986 and in 2006 were measured using the following multiple-choice question: “Here is a list of some reasons children give for liking sport/PA. Please read each one and tick how important this is to you.” Nine reasons were the same in 1986 and 2006. These were: “have fun,” “make new friends,” “see friends,” “improve health,” “get in good shape,” “enjoy the feeling of using my body,” “be good,” “looking good,” and “to win”. Each reason had three response categories: “very important,” “fairly important,” and “not important.” This question was formulated in a way that allowed each child to respond, even if they were not physically active. Responses provided by physically active children probably reflect their reasons and motives for taking part. All questions require evidence of reliability and validity in adolescents from multiple countries before they can be utilized within the HBSC study, and these measures have been shown to have good reliability and reasonable validity (Iannotti et al., 2013).

Factor analysis (principal components analysis, varimax rotation) of the nine reasons for participating in sport which featured in the questionnaire at both time points was conducted separately by sex, year, and country, with three factors rotated in each analysis in order to directly compare across countries and time points. Each analysis yielded three factors with an eigenvalue greater than 1.0. These were consistent with previous studies (Wold & Kannas, 1993; Iannotti et al., 2013) and formed the basis of the subsequent analysis. From these data, a sum-score index was constructed for each factor by adding the values of the variables in each factor (0 = not important, 1 = fairly important, 2 = very important). Each index was composed of three variables, thus sum-scores ranged from 0 to 6. The social index was composed of the items “have fun,” “make new friends,” “see friends”; the health index consisted of “improve health,” “get in good shape,” “enjoy the feeling of using my body”; and the achievement index included “be good,” “looking good,” and “to win.” Participants with one or more missing values were excluded from the analysis. Fewer than 5% of responses were missing on each variable. Cronbach’s alpha values for each index within the whole sample were .64 for social, .58 for achievement, and .63 for health. Cronbach’s alpha values in the subgroups were (2006 estimates in parenthesis): achievement reasons index in 1986: .51 (.58) for Finland, .62 (.66) for Norway, and .46 (.60) for Wales; health reasons index in 1986: .61 (.67) for Finland, .61 (.68) for Norway, and .59 (.64) for Wales. Finally, Cronbach’s alphas for the social reasons index in 1986 were .55 (.68) for Finland, .63 (.65) for Norway, and .57 (.62) for Wales.

## Procedure

Questions were translated into Finnish and Norwegian and were available in both English and Welsh in Wales. The 1986 survey was carried out in February–March 1986 in Finland, November–December 1985 in Norway, and March 1986 in Wales. The 2006 survey was carried out between March and May 2006 in Finland, November–December 2005 in Norway, and January–March 2006 in Wales. The students completed the questionnaire during one lesson period at school. Teachers were asked to follow a standard set of instructions to lead classroom data collection. In 2006, external interviewers (i.e., not teaching staff) administered data collection in Wales. Student anonymity was ensured in each

country, with ethical approval being granted from the relevant authorities, using a procedure of passive consent from parents and students.

Analysis

The indices of reasons to like LTPA were used to calculate means and standard deviations for each reasons index, while Student's *t*-tests and one-way analyses of variance (ANOVAs) were used to assess differences between gender, country, and year.

Univariate ANOVAs were performed to establish whether or not each reasons index changed according to gender, year, and country. A univariate ANOVA was then performed to investigate to what extent reasons predicted frequency of PA and whether this effect was significantly different across the two time points. A top-down approach was applied, taking higher order interactions into account first, and removing those that were not statistically significant from the model. All analyses were conducted in SPSS version 20 (IBM Corp. Armonk, NY, 2011).

The 1986 data files did not include consistent school class identifiers for each country, making it impossible to analyze the data taking the clustered design into account. The design effects for the three reason indices and LTPA in the 2006 study were less than 2 (with the exception of the social index for Wales which was 2.4), suggesting that the dependency in the data is not likely to have substantially affected the estimations. Acknowledging potential cluster effects, the significance level was set to  $P < .01$ .

Results

Five percent of boys and 9% of girls reported that they never engaged in LTPA. The means and standard deviations for LTPA and each PA reasons index according to gender, year, and country are presented in Table 2. As indicated in Table 2, boys' overall mean level of times per week in LTPA during leisure-time and mean score on the achievement reasons index were significantly higher than those of girls, while there were no statistically significant gender differences in the means of health and social reasons for PA.

Further, independent *t*-tests (see Table 2) showed significant overall differences between year in LTPA, achievement reasons, and social reasons, but not in health reasons. Achievement and social reasons were rated as more important in 2006 compared with 1986. The effect sizes were small for achievement reasons, and moderate for social reasons.

Univariate ANOVAs were performed to establish whether or not each reasons index changed according to gender, year, and country (Table 3). Statistically significant differences (at the  $P < .01$  level) between countries in the three types of reasons were observed. As indicated in Table 2, Wales had the highest and Norway had the lowest means for achievement reasons for both genders, while overall ratings of health reasons were highest in Wales and lowest in Finland. As shown in Fig. 1, ratings of social reasons being important were higher in Norway. Statistically significant interaction effects ( $P < .01$ ) were observed on the health reasons index for year  $\times$  country and gender  $\times$  country, but the effect sizes were very low (Table 3). Regarding achievement

Table 2. Means and standard deviations of times per week in leisure-time vigorous physical activity and reasons for liking LTPA indices by gender, year, and country; *t*-test for mean differences between genders the year mentioned in the same row (indicated by <sup>a</sup>); *t*-test for mean difference between year within gender (indicated by <sup>b</sup>), with effect size (Cohen's *d*)

Country	Sex	Year	M	SD	N	<i>t</i>	<i>d</i>	<i>P</i>
<b>Physical activity</b>								
Overall	Boys	1986	3.4	2.24	2113	16.21 <sup>a</sup>	.52	.000
		2006	4.1	2.16	2368	-10.08 <sup>b</sup>	-.32	.000
	Girls	1986	2.3	1.98	2271	-14.48 <sup>a</sup>	-.44	.000
		2006	3.2	2.12	2368	13.4 <sup>a</sup>	.42	.000
Finland	Boys	1986	3.1	2.17	471	6.21 <sup>a</sup>	.45	.000
		2006	4.1	2.09	826	-8.37 <sup>b</sup>	-.47	.000
	Girls	1986	2.2	1.83	463	-11.25 <sup>a</sup>	-.67	.000
		2006	3.5	2.02	885	5.80 <sup>a</sup>	.29	.000
Norway	Boys	1986	3.0	1.90	611	2.89 <sup>a</sup>	-.16	.004
		2006	3.9	2.07	801	-8.39 <sup>b</sup>	-.48	.000
	Girls	1986	2.7	1.87	690	-5.48 <sup>b</sup>	-.25	.000
		2006	3.2	2.05	730	5.98 <sup>a</sup>	.34	.000
Wales	Boys	1986	3.8	2.39	1031	16.37 <sup>a</sup>	.71	.000
		2006	4.2	2.32	725	-3.86 <sup>b</sup>	-.17	.000
	Girls	1986	2.2	2.09	1118	-6.54 <sup>a</sup>	-.30	.000
		2006	2.9	2.24	753	11.46 <sup>a</sup>	.57	.000
<b>Achievement reasons</b>								
Overall	Boys	1986	2.5	1.68	2045	3.48 <sup>a</sup>	.06	.001
		2006	3.0	1.73	2267	-8.39 <sup>b</sup>	-.29	.000
	Girls	1986	2.4	1.57	2220	-6.15 <sup>b</sup>	-.19	.000
		2006	2.7	1.56	2308	6.65 <sup>a</sup>	.18	.000
Finland	Boys	1986	2.0	1.46	468	2.28 <sup>a</sup>	.01	.023
		2006	3.2	1.58	807	-13.39 <sup>b</sup>	-.79	.000
	Girls	1986	1.8	1.35	457	-13.93 <sup>b</sup>	-.79	.000
		2006	2.9	1.44	863	3.64 <sup>a</sup>	.20	.000
Norway	Boys	1986	2.2	1.65	557	1.82 <sup>a</sup>	.12	.069
		2006	2.5	1.80	746	-2.79 <sup>b</sup>	-.17	.005
	Girls	1986	2.0	1.58	658	-0.98 <sup>b</sup>	-.06	.325
		2006	2.1	1.59	697	3.98 <sup>a</sup>	.24	.000
Wales	Boys	1986	3.0	1.66	1020	2.44 <sup>a</sup>	.17	.015
		2006	3.3	1.69	714	-3.80 <sup>b</sup>	-.18	.000
	Girls	1986	2.8	1.52	1105	-0.85 <sup>b</sup>	-.07	.394
		2006	2.9	1.52	748	4.96 <sup>a</sup>	.25	.000
<b>Health reasons</b>								
Overall	Boys	1986	4.7	1.33	2063	-1.62 <sup>a</sup>	-.08	.105
		2006	4.7	1.39	2272	-0.30 <sup>b</sup>	0	.763
	Girls	1986	4.8	1.24	2215	-0.22 <sup>b</sup>	0	.830
		2006	4.8	1.26	2310	-1.50 <sup>a</sup>	-.08	.133
Finland	Boys	1986	4.4	1.42	468	-1.86 <sup>a</sup>	-.07	.063
		2006	4.5	1.45	806	-1.3 <sup>b</sup>	-.07	.194
	Girls	1986	4.5	1.26	461	-3.52 <sup>b</sup>	-.24	.000
		2006	4.8	1.21	866	-4.67 <sup>a</sup>	-.22	.000
Norway	Boys	1986	4.6	1.33	572	-1.21 <sup>a</sup>	-.11	.225
		2006	4.8	1.38	751	-2.45 <sup>b</sup>	-.15	.014
	Girls	1986	4.7	1.25	654	0.27 <sup>b</sup>	0	.786
		2006	4.7	1.35	697	1.60 <sup>a</sup>	.07	.109
Wales	Boys	1986	4.9	1.25	1023	0.08 <sup>a</sup>	0	.933
		2006	4.9	1.30	715	0.19 <sup>b</sup>	0	.851
	Girls	1986	4.9	1.20	1100	0.86 <sup>b</sup>	0	.389
		2006	4.9	1.22	747	0.64 <sup>a</sup>	0	.521
<b>Social reasons</b>								
Overall	Boys	1986	3.9	1.47	2064	0.32 <sup>a</sup>	0	.752
		2006	4.6	1.37	2278	-16.81 <sup>b</sup>	-.49	.000
	Girls	1986	3.9	1.24	2220	-16.32 <sup>b</sup>	-.56	.000
		2006	4.6	1.26	2319	1.04 <sup>a</sup>	.01	.298
Finland	Boys	1986	3.9	1.39	465	-2.92 <sup>a</sup>	-.22	.004
		2006	4.3	1.46	809	-3.66 <sup>b</sup>	-.28	.000
	Girls	1986	4.2	1.36	457	-1.53 <sup>b</sup>	-.07	.127
		2006	4.3	1.44	864	-1.18 <sup>a</sup>	0	.237
Norway	Boys	1986	4.3	1.39	579	-2.53 <sup>a</sup>	-.15	.011
		2006	5.0	1.24	751	-9.5 <sup>b</sup>	-.53	.000
	Girls	1986	4.5	1.35	661	-8.23 <sup>b</sup>	-.49	.000
		2006	5.1	1.11	705	-0.86 <sup>a</sup>	-.08	.390
Wales	Boys	1986	3.7	1.49	1020	4.16 <sup>a</sup>	.20	.000
		2006	4.7	1.29	718	-15.01 <sup>b</sup>	-.72	.000
	Girls	1986	3.4	1.48	1102	-15.44 <sup>b</sup>	-.70	.000
		2006	4.4	1.37	750	3.22 <sup>a</sup>	.23	.001

LTPA, leisure-time physical activity.

Table 3. Univariate analysis of variance testing interaction effects of gender, year, and country on index of achievement reasons ( $N = 8840$ ,  $R^2 = .08$ )

Variable	df	F	$\eta$	P
Achievement reasons ( $N = 8840$ , $R^2 = .08$ )				
Intercept	1	21548.92	.709	.000
Year (Y)	1	214.441	.024	.000
Gender (G)	1	58.145	.007	.000
Country (C)	2	213.427	.046	.000
Y X G	1	5.637	.001	.018
Y X C	2	82.387	.018	.000
G X C	2	.207	.000	.813
Y X G X C	2	.645	.000	.525
Social reasons ( $N = 8881$ , $R^2 = .12$ )				
Intercept	1	81734.64	.902	.000
Year (Y)	1	424.19	.046	.000
Gender (G)	1	.33	.000	.566
Country (C)	2	206.57	.045	.000
Y X G	1	2.38	.000	.123
Y X C	2	62.38	.014	.000
G X C	2	21.28	.005	.000
Y X G X C	2	1.46	.000	.234
Health reasons ( $N = 8860$ , $R^2 = .02$ )				
Intercept	1	109774.36	.925	.000
Year (Y)	1	7.32	.001	.007
Gender (G)	1	5.35	.001	.021
Country (C)	2	52.79	.012	.000
Y X G	1	.36	.000	.550
Y X C	2	4.71	.001	.009
G X C	2	8.18	.002	.000
Y X G X C	2	2.78	.001	.062

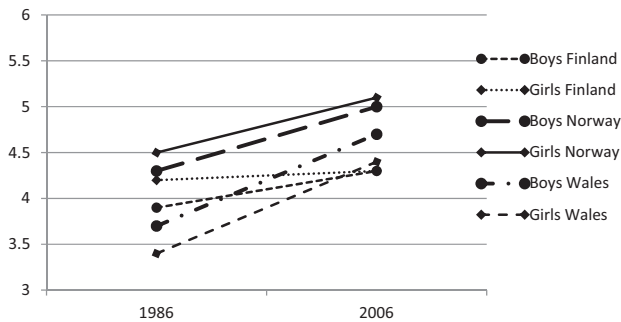


Fig. 1. Mean level of perceived importance of social reasons for liking leisure-time physical activity by gender, country, and year.

reasons, significant interaction effects were found for year  $\times$  country (Table 3). Achievement reasons increased more in Finland than in the other countries.

Significant interaction effects were observed for social reasons for gender  $\times$  country and year  $\times$  country (Table 3), but the effect size (indicated by partial eta<sup>2</sup>) is very small. As shown in Fig. 1, the mean level of social reasons increased for both genders in all countries during the 20-year period. The increase was smaller in Finland compared with Norway and Wales.

A univariate ANOVA was then performed to investigate to what extent reasons predicted frequency of LTPA and whether this effect was significantly different across the two time points (Table 4). No four-way interaction effects were observed at the  $P < .01$  level, while

Table 4. Univariate analysis of variance testing interaction effects of gender, year, country, and reasons for liking leisure-time physical activity on physical activity levels ( $N = 8610$ ,  $R^2 = .15$ )

Variable	df	F	$\eta$	P
Intercept	1	16772.10	.662	.000
Year (Y)	1	169.26	.019	.000
Country (C)	2	4.13	.001	.016
Gender (G)	1	331.57	.037	.000
Achievement reasons (A)	1	31.83	.004	.000
Social reasons (S)	1	19.97	.002	.000
Health reasons (H)	1	280.01	.032	.000
Y X C	2	3.67	.001	.025
Y X G	1	.47	.000	.493
Y X A	1	1.13	.000	.288
Y X H	1	1.12	.000	.291
Y X S	1	.00	.000	.951
C X G	2	41.35	.010	.000
C X A	2	6.54	.002	.001
C X H	2	4.77	.001	.008
C X S	2	2.93	.001	.053
G X A	1	.06	.000	.813
G X H	1	.41	.000	.521
Y X C X G	2	3.38	.001	.034
Y X G X A	1	6.94	.001	.008
Y X G X H	1	6.60	.001	.010
Y X G X S	2	1.44	.000	.238

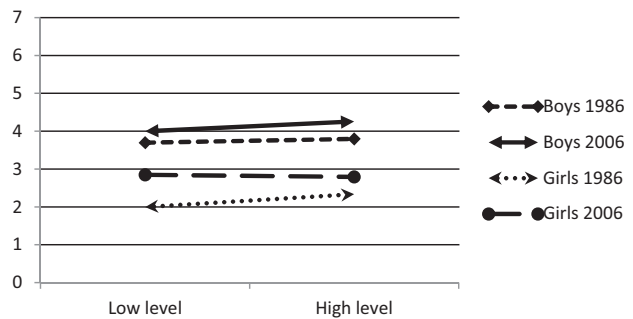


Fig. 2. Mean number of times per week in leisure-time physical activity by perceived importance of achievement reasons for liking leisure-time physical activity<sup>1</sup>, gender, and year.  
<sup>1</sup>Low level denotes 1 standard deviation below, and high level 1 standard deviation above, the estimated mean value of achievement reasons.

year  $\times$  gender  $\times$  achievement was significant, but with a low effect size. Figures 2 and 3 illustrate the three-way interaction effect between gender, year, and level of achievement and health reasons on the outcome variable LTPA. The estimates are based on unstandardized betas from the regression coefficients derived from the ANOVA. Higher levels of LTPA were observed for those girls and boys who rated achievement and health reasons as more important. The association between high and low levels of achievement and health reasons, and LTPA, was very stable among boys. Among girls, there was a tendency for the association between achievement reasons and LTPA to decrease (Fig. 2), while there was a small increase in the strength of the association between health reasons and LTPA (Fig. 3). However, as indicated by the effect sizes, and also illustrated in Figs 2 and 3,

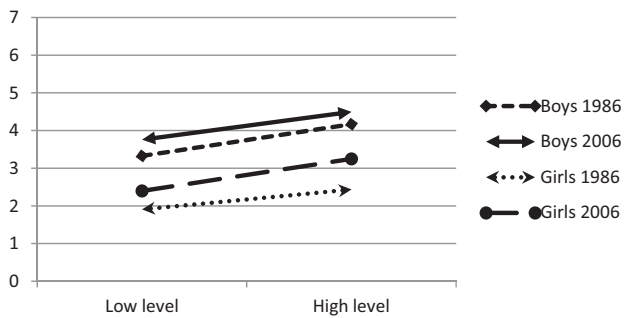


Fig. 3. Mean number of times per week of leisure-time physical activity by perceived importance of health reasons for liking leisure-time physical activity<sup>2</sup>, gender, and year.

<sup>2</sup>Low level denotes 1 standard deviation below, and high level 1 standard deviation above, the estimated mean value of health reasons.

these interaction effects were very small, and most likely not important in terms of practical significance.

## Discussion

The findings suggest that in general, the 13-year-olds in 2006 tended to report higher importance of achievement and social reasons for liking LTPA than the same age group 20 years earlier, while the changes in health reasons were minor. These reasons were associated with PA in a similar way at both time points.

### Change in perceived importance of reasons

The findings suggest that reasons for liking sport and LTPA changed among 13-year-olds over the 20-year period, with young adolescents in 2006 appearing to attach a higher value on achievement and social reasons than in 1986. The increase in social reasons was high, as indicated by a substantial mean difference between the two time points in all countries. The increase in importance of social reasons indicated by the current study also seems to correspond to the more recent advances in understanding PA motivation. There has been an increasing acknowledgement of PA as having complex, interacting determinants, moving away from a narrow focus on individual factors. Thus, the attention to acknowledge and emphasize social goals, such as suggestions about “socializing” the achievement goal theory (King & Watkins, 2012), and proposals to consider social orientations alongside task and ego orientations (Stuntz & Weiss, 2009) has proliferated in recent years. Both mastery and performance goals can be construed as individualistic goals because they both neglect the social reasons for striving to achieve in the physical domain and focus instead on personally endorsed reasons. King and Watkins (2012) suggest that social affiliation goals and social concern goals should be included when investigating motivation. Moreover, many types of LTPA may constitute a good alternative to socializing through

social media because adolescents actually meet others face-to-face, perhaps satisfying social needs in other – and more attractive – ways than is possible through the virtual social world.

Because of the increasing public and political concern caused by the obesity epidemic, as well as the exponential growth of the fitness industry (Sturm, 2004) during the period 1986–2006, an increase in the perceived importance of health reasons for being physically active was expected. However, the findings did not indicate substantial change in the responses of 13-year-olds to questions regarding the importance of engaging in LTPA to improve their health. Based on the mean values, health reasons for liking LTPA were considered most important among the different types of reasons at both time points. It is possible that a ceiling effect has occurred, in that the perceived importance of health reasons was already very high in 1986, leaving little room for an increase. It is also possible that the values underlying health motivation have changed in line with societal changes. Thus, it is conceivable that adolescents in 2006 liked LTPA for different types of health reasons than adolescents in 1986, and that the items in the questionnaire did not tap into these differences.

In this study, the perceived importance of reasons for liking LTPA seems to increase in all countries, but the magnitude of the increase varied between them. The highest increase in achievement reasons, and the lowest in social reasons, was observed in Finland compared with Norway and Wales. Finnish adolescents had the lowest rating of importance of achievement reasons in 1986, so it is possible that the increase was higher because there was more room for change. Another possibility is that the underlying cultural values related to achievement in PA may have changed in a different way in Finland than in the two other countries.

The high level of importance attached to social reasons in Norway compared with the other countries is noteworthy. Modernization processes of individualization and informalization appear to be resulting in a shift from traditional sports toward individual exercise, recreation/fun, and lifestyle sports (such as parkour) in Western countries, producing shifts in the character of the sports young people choose to play as well as their reasons for liking them (Green et al., 2015). This development is taking place at a different pace in the three countries, and perhaps more rapidly in Norway, due to the growth in individual and social prosperity during the 1990s (in an already prosperous country compared with Finland and Wales) alongside greater gender equality. Green et al. (2015) point out that in Norway, the growth of sports participation between 1997 and 2007 (from a high base in relation to many other countries) coincided with substantial increases in income across all age groups and both sexes alongside the maintenance of social mobility and the entrenchment of relatively generous leisure-time. In terms of values (which constitute

the basis for attitudes toward sports), Green et al. (2015) suggest that the strong sporting and exercise culture in Norway, as compared with other countries, represents a large element of continuity in widely shared predispositions toward sport. Along this line of reasoning, it seems plausible to explain the high level and increase in social reasons for liking sport in Norway as compared with Finland and Wales in terms of changes alongside a continuity of high sport interest in already favorable structural (social and economic) conditions, (cultural) values, and (social) processes.

### Changes in associations between reasons and LTPA

Differences in the magnitude of associations were observed between the three types of reasons and LTPA in the three countries. However, the associations did not change dramatically from 1986 to 2006 in any of the countries, suggesting stability in these findings across countries over time. Health reasons were the strongest predictor of LTPA at both time points.

The results show that all types of reasons for liking LTPA, achievement, health, and social, were weakly but significantly associated with LTPA, and that these associations were stable over time. This could be indicative of there being many complex determinants that interact to affect levels of LTPA. While knowledge of the health benefits of LTPA, wanting to achieve and seeking social support were weakly associated with LTPA, this may not be sufficient to overcome the many potential structural barriers, such as belonging to a low-income family or a lack of green or safe space or leisure facilities in the neighborhood, to elicit behavior change (Dishman et al., 1985; Giles-Corti & Donovan, 2002). Moreover, while there was a slight increase in LTPA during this time in the current study, 20 years may be a short time to observe changes in the relationship between reasons and levels of LTPA. The stability of the association between reasons and LTPA, alongside a change in how adolescents think about LTPA, suggests that traditional values may still prevail in terms of impact on behavior. The same seems to hold true with regard to gender inequality. Most sports are still male dominated, and the values associated with participation in sports are traditionally considered as expressions of masculine qualities (Kidd, 2013). The present study supports such a gendered distinction, as boys tended to report a higher participation level in LTPA, and to rate achievement reasons higher in importance, than girls.

Small changes in the relationship between reasons and LTPA over time were observed. Achievement reasons were more strongly associated with LTPA among boys in 2006, while the opposite was observed for girls. This may be due to girls' pressure to be feminine and hide interest and participation in sport to maintain an image of female physicality in modern society. Girls who do engage in sport tend to take on a double identity, leading

to conflict with regard to "sense of self" (Gorely et al., 2003). The small increase in the relationship between health reasons and LTPA for girls could possibly be explained by the inclusion of the item "to get in good form" within the health index. Modern society places great emphasis on the ideal female body shape, which has become progressively thinner during the past 30 years (Brown & Witherspoon, 2002). For example, the airbrushing of women and celebrities in magazines, decreasing weight of models compared with the average woman, and the clothing industry's continued development of tiny fits have been shown to exert pressure on young girls to strive for this idealized body shape (Brown & Witherspoon, 2002). Therefore, adolescent girls may be motivated to participate in PA in order to lose weight.

However, the interaction effects between gender and year on the associations between achievement and health reasons, and LTPA, were minor, and caution should be exercised when interpreting these findings. In general, the observed associations between reasons for liking LTPA were stable over time for both genders and in all countries.

### Strengths and limitations

This study has a number of important strengths including a large sample size with high levels of statistical power, representative samples of adolescents from three countries over a 20-year period, and a standardized protocol for data collection ensuring internationally comparable data. Moreover, this is the only study detected by literature searches which addresses how reasons for liking LTPA change over time across generations.

A number of limitations should be recognized. The cross-sectional nature of these results means that caution should be taken when inferring causality. It is possible that the level of LTPA may affect how adolescents think about reasons for liking LTPA, rather than vice versa. Because of the large sample size and use of secondary data, it was not possible to measure PA using a more valid and reliable method, such as accelerometers. However, all questions have been validated within the relevant age group (Booth et al., 2001; Vuori, 2005; Rangul et al., 2008). Using only one LTPA question may give quite a one-sided picture of LTPA among young people. A serious limitation is linked to development of the theoretical basis and measurement of reasons for liking LTPA as a measure of motivation since the 2006 data collection exercise. The three sum-scores constitute crude and simple measures, compared with those generally applied in the research literature at present. More recent theories of motivation, such as the self-determination theory (Ryan & Deci, 2000), have obviously improved the understanding of PA motivation beyond what was known in 1983/1984, at the time when the first survey in the current study was planned and

piloted. Reasons for liking LTPA and sports may also be quite different in many subgroups of young people according to the types of sport they undertake. Another potential limitation is that leisure was not directly specified in the questions about reasons for liking PA, making it uncertain whether they also included PE or other school PA in their responses. However, as the other questions regarding PA in the questionnaire were contextualized in the leisure context, it is likely that the respondents were mainly considering reasons for liking LTPA (and not PA in general) when they responded.

The internal consistency (as measured by Cronbach's alpha) of the reasons indices was moderate to low, possibly indicating that the reliability of these measures was low. However, as there were only three items in each index, and the items in each index were intended to cover a breadth of meaning within each of the types of reasons, high internal consistency is not to be expected (Peterson & Kim, 2013). Considering the small number of items and their necessary heterogeneity, even reliabilities of 0.4 are regarded as reasonable (European Social Survey Education Net, 2013). Moreover, the consistency of findings across countries and genders suggests that the reliability of these measures is satisfactory.

In conclusion, this study suggests that achievement and social reasons for liking LTPA and sport were rated as more important in 2006 than in 1986 among 13-year-olds, in particular with regard to LTPA as a context for socializing and meeting friends. The associations between achievement, health, and social reasons, and LTPA did not change dramatically from 1986 to 2006 in any of the countries. Thus, it may take a longer time than 20 years for a change in reasons to translate into a change in behavior, although the small increase in LTPA observed in the study may in part be due to adolescents being more motivated for sports and PA in general. At both time points, health reasons for liking LTPA were considered most important, and were the strongest predictor of LTPA. The findings seem robust as they were consistent across countries and genders. While acknowledging the limitations with regard to the measurements applied, the study offers unique and interesting insights into how adolescents' views on sport and exercise may have changed during 20 years. These insights may be useful when considering how and why existing youth programs in LTPA, such as organized sports, may be changed and improved, especially with regard to attrition issues. But this should be considered within the context of the multitude of complex, interacting determinants of, and structural barriers to, LTPA (Dishman et al., 1985; Giles-Corti & Donovan, 2002).

### Implications

Although further research is required, these results could have practical implications for the recruitment and maintenance of sports and LTPA among adolescents.

Achievement, social, and health reasons for liking LTPA were associated with self-reported LTPA, and the importance of social reasons seems to have significantly increased over time. Therefore, interventions and educational efforts could be improved by an increased focus on LTPA and sport as a social activity. However, LTPA was more strongly associated with health reasons than social reasons, which may suggest that health education is still a viable strategy in PA promotion with adolescents. This should be implemented as a component of multilevel interventions in order to maximize effectiveness by overcoming structural barriers at the various levels of the social ecological model (Dishman et al., 1985; Giles-Corti & Donovan, 2002). Moreover, although this could be a highly motivating factor, a focus upon the benefits of PA with regard to body shape should be approached with caution due to the sensitive nature of this subject, the pressure from society, and the potential for mental health issues to arise (Brown & Witherspoon, 2002).

### Perspectives

This paper demonstrated that adolescents' (health, achievement, and social) reasons for liking LTPA have changed in a similar way in Finland, Norway, and Wales from 1986 to 2006. In particular, the importance of liking LTPA for social reasons such as being with friends has increased. The importance of health reasons was similar at both time points, and health reasons were more strongly associated with LTPA than achievement and social reasons. Public health efforts to increase PA on the basis of knowledge about the beneficial health effects of PA therefore seem warranted.

The development of psychological theories of PA motivation during the past four decades seems to reflect the same process of modernization as suggested by the findings of the present study; an increase in emphasis on achievement and social reasons during the 20 years from 1986 to 2006. The increase in social reasons indicated by the current study seems to correspond to the more recent advances in understanding PA motivation, such as suggestions about "socializing" the achievement goal theory (King & Watkins, 2012), and proposals to consider social orientations alongside task and ego orientations (Stuntz & Weiss, 2009).

**Key words:** Young people, motivation, sport psychology, trends, modernization.

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