

Longitudinal changes in sports enjoyment among adolescents

PÅL LAGESTAD¹, ARNE SØRENSEN²

^{1,2}Nord University, Sport science and physical education department, NORWAY

Published online: March 30, 2018

(Accepted for publication January 17, 2018)

DOI:10.7752/jpes.2018.01011

Abstract:

Problem Statement: The experience of enjoyment in sport is of major importance in creating good physical health and lifelong enjoyment of physical activity and preventing dropout from sport. A search of the literature indicates a lack of longitudinal studies on the evolution of enjoyment in organized sport, and factors that are associated with enjoyment of sport from a longitudinal perspective. *Approach:* Self-reported enjoyment in sports training and competitions, and factors that could be associated with such enjoyment, were measured among the same adolescents from the age of 14 to the age of 19, using a questionnaire. *Purpose:* The aim of this study is to examine the evolution of self-reported enjoyment in sports training and competitions, and which factors that are associated with enjoyment in sports training and competitions. *Results:* Enjoyment in sports competitions stays the same, while enjoyment in organized sports training decreases from the age of 14 to the age of 19. Furthermore, enjoyment in training increases with the frequency of sports participation, physical activity level and enjoyment in sports competitions at the age of 14, whereas it increases with participation in unorganized physical activity and enjoyment in sports competitions at 16 years of age. At 19 years of age, enjoyment increases only with enjoyment in sports competitions. While correlation analyses shows that enjoyment at competitions increased by the frequency of sport participation, physical activity level, and VO_{2peak} at the age of 14, no such associations were found at 16 years of age. At 19 years of age, enjoyment at sport competitions increased only by the frequency of sport participation. Gender and overweight show no associations with enjoyment in training or sports competitions for any measure of time. *Conclusions:* The findings indicate that enjoyment in sports competitions is a main predictor of adolescents' enjoyment of sport.

Key words: enjoyment, sport, adolescents, longitudinal changes.

Introduction

Research has indicated that participation in sport has a positive impact on adolescents' lives. Numerous studies have shown that participation in sport is negatively associated with physical, social and psychological problems (Anderssen et al., 2007; Eime, Young, Harvey, Charity & Payne, 2013) and participation in organized sport is of major importance as a contributor to adolescents' health (Aarnio, Winter, Peltonen, Kujala, & Kaprio, 2002; Khan et al., 2012; Perkins, Jacobs, Barber, & Eccles, 2004; Telama, Yang, Hirvensalo, & Raitakari, 2006), especially to adolescents' physical activity (PA) levels and to preventing overweight and fostering increased cardiorespiratory fitness. Aires et al. (2012) analysed longitudinal associations between cardiorespiratory fitness, physical activity and body mass index in a 4-year longitudinal study that included 170 adolescents (97 girls and 73 boys), aged from 11 to 17 years at baseline. Among girls, independent associations were observed between cardiorespiratory fitness and PA categories related to participation in organized and non-organized sports outside school and participation in sports competitions. Among boys, associations were found only with participation in sports competitions.

Participation in sport during adolescence also seems to have a positive effect on PA levels as adults. As an example, Aarnio et al. (2002) found that **participation in youth sport and sports competitions** significantly predicted adult PA and that the stability of leisure time PA was highest among those who participated in several different types of sport. Those who participated in organized sports were also more often persistent exercisers than those who did not. In addition, research has suggested that a positive attitude towards sport is important in promoting a lifelong active lifestyle (Aarnio et al., 2002; Kjønnsen, Anderssen, & Wold, 2009; Telama et al., 2006). The results highlight the importance of youth participation in organized activities and competitive sports over time to achieve health-related fitness benefits.

Unfortunately, in Norway, as in other countries all around the world, dropout from organized sports increases during adolescence (Bélanger, Gray-Donald, O'Loughlin, Paradis, & Hanley, 2009; Riddoch et al., 2004; Seippel, Strandbu, & Sletten, 2011; Telama & Yang, 2000). It can be argued that adolescents' enjoyment in sports training and competitions may be of major importance to prevent dropout from sport. Allender, Cowburn, and Foster (2006) highlighted enjoyment as one of three major reasons for participation in youth sport, besides weight management and social interaction. In relation to sport, a psychological perspective, considering

enjoyment as the prevalence of positive attributes (*McNulty & Fincham, 2011*), seems appropriate. According to *McNulty and Fincham (2011)*, *enjoyment* is an important factor as a subjective experience, in relation to satisfaction with the past, optimism for the future and happiness in the present. Wiersma (2001) reported two major factors predicting enjoyment in youth sport: a self-derived perception of competence and the excitement of competition. However, even if some studies have examined predictors of enjoyment in sport, a search of the literature shows that no study has followed the level of enjoyment among the same adolescents over the period of adolescence – an issue that a longitudinal study would address. Such a longitudinal study would also use the same questions and reply options and thus avoid the problem of different operationalizations of enjoyment, as found in previous studies.

Ideally, sports should be organized in such a way that all groups of adolescents experience high levels of enjoyment, but the research on this area is limited. Most studies do not use enjoyment in sport as the dependent variable. The available data provide the opportunity to investigate whether overweight, peak oxygen uptake (VO_{2peak}), gender, enjoyment in relation to sports competitions, PA level and participation in unorganized PA are associated with enjoyment in sports training and competitions. We argue that these factors may be associated with enjoyment in sport, but more empirical data are needed.

Overweight and obesity are a rising problem in our society. Research points to easy access to high-energy foods and low amounts of PA being the main predictors of overweight (Bhargava, Kandpal, & Aggarwal, 2016; Janssen, Katzmarzyk, Boyce, King, & Pickett, 2004; Kopelman, 2000). Several studies show that adolescents with overweight are less physically active and fit compared with other adolescents (Huttunen, Knip, & Paavilainen, 1986) and perform lower on physical tests (Fernández, Canet, & Giné-Garriga, 2017; Marta, Marinho, & Marques, 2012). Several studies have found a strong negative correlation between overweight and participation in PA and sport (Fernández et al., 2016; Mustelin et al., 2011; Petracovschi, 2012). Latty et al. (2007) found significant associations between overweight and depression in general. Fernández et al. (2012) found that adolescents with overweight enjoyed PA, but they felt that they were not appreciated by the other members of the sport. From this point of view, one may argue that overweight may predict enjoyment in sport. Furthermore, lower PA levels and cardiorespiratory fitness among adolescents with overweight (Graham et al., 2012; Marques, Pizarro, Figueiredo, Mota, & Santos, 2013; Marta et al., 2012; Pfeiffer, Dowda, Dishman, Sirard & Pate, 2007) might also reduce their experience of enjoyment in sport.

Low VO_{2peak} is associated with low PA levels (Aires et al., 2012; Ekelund et al., 2001; Marta et al., 2012). All sports in general require movement of the body (such as running, jumping and quick movements of the feet) and thus require a certain level of cardiorespiratory fitness. It is reasonable to argue that in most sports, performance will increase with increased cardiorespiratory fitness. A study among 14-year-old adolescents found positive correlations between VO_{2peak} and enjoyment of physical education (Lagestad, 2017), indicating such a hypothesis. Patriksson (1988) found that low performance was one of the three main reasons for dropping out of sport and it can be hypothesized that adolescents with lower levels of cardiorespiratory fitness may experience lower levels of enjoyment in sport.

According to Krange and Strandbu (2004), among adolescents in Norway 46% of boys and 36% of girls participate in organized sport. We also know that boys in general are more physically active than girls (Horst, Paw, Twisk, & Mechelen, 2007; Santos, Gomes & Mota, 2005) and take part more in PA than girls (Asfour, Koussa, Terrino, Toutenberg, & Prado, 2016; Bengoechea, Sibiston, Ahbed, & Farnoush, 2013; He, Ishii, Adachi, Nonue, & Oka, 2013). Boys also report a higher level of physical self-concept (Klomsten, Skaalvik, & Espnes, 2004) and the authors suggest that this is a possible explanation for a greater dropout from sport among young girls. There are probably many explanations for fewer girls participating in organized sport. Lower levels of enjoyment in sport may be one explanation.

Using analyses of interviews, Jakobsson (2014) found that taking part in organized sport was difficult for adolescents if they did not enjoy competitions. As they get older, the competitions become increasingly serious and taking part requires higher perceptions of competence (Crane & Temple, 2015). It also seems that enjoyment in training is higher than in competitions (Aspvik, Sæther, & Ingebrigtsen, 2012). Harrist and Witt (2015) found that participation in sport is often motivated by two main themes: enjoyment and serving a purpose. Also Wiersma (2001) highlights that taking part in competitions is a major source of enjoyment in sport. These studies indicate that there may be a close association between enjoyment of competitions and enjoyment of sport. Comparing PA levels and sport between adolescents at the ages of 9 and 15, the level of activity decreases with age, indicating that enjoyment in sport may decrease during adolescence. When adolescents take part in unorganized activities outside school, it is reasonable to suggest that they do so because they enjoy them. Cragg and Cameron (2006) reported that boys with three or more close friends with an active social life are more active in unorganized PA, than other adolescents.

In this discussion we have argued that no longitudinal studies have followed the evolution of the same adolescents' enjoyment of sports in relation to training or competitions. Neither do we have much knowledge of which factors correlate with adolescent enjoyment in sports in different age groups. The available data include longitudinal information on adolescents' PA patterns, physical fitness and enjoyment in sport from 14 years old to 19 years old. Based on these data, this study will examine how adolescents' level of enjoyment in sports training and competitions changes during adolescence. Furthermore, we will examine which of the factors –

overweight, VO_{2peak} , gender, enjoyment in relation to sport competitions, PA level and participation in unorganized PA – correlate with enjoyment in sports training and sport competitions.

Materials and methods

Design

This study employed quantitative data (questionnaires) from a research project that included a group of randomly selected adolescents ($N = 116$) and measures of enjoyment in sports and sports competitions, VO_{2peak} , PA level, participation in unorganized PA and sports, height and weight. These variables were tested at six measurement times, at the end of each school year, from 14 years of age to 19 years of age.

Participants

116 adolescents aged 14 years in six randomly selected groups (three teams x two classes) in two lower secondary schools in a town in the middle of Norway (age 14 ± 0.5 years, weight 54.2 ± 10.9 kg, height 1.63 ± 0.08 m) were selected to the study. The distribution of boys and girls was relatively equal in the sample (61 boys and 55 girls), as was the distribution of urban and rural adolescents.

Only 41 adolescents completed the measures in all 6 test years. The reasons for invalid data were dropout because of illness, injury, pregnancy, or the student moving away from the town. To obtain the necessary response rate, it was decided to include adolescents who had valid measurements at three time points: 14 years of age, 16 years of age and 19 years of age. With this strategy, evolution of enjoyment in sports was examined in the first year at lower secondary school (14 years old), at the end of lower secondary school/start of upper secondary school (16 years old) and at the end of secondary school (19 years old). In all, we obtained valid data for 102 adolescents at this three time points (52 girls and 50 boys), but only 47 adolescents were participating in sport (21 girls and 26 boys). These 47 adolescents were included in the longitudinal analysis. However, to clarify whether enjoyment in sport varied in relation to the adolescents' gender, VO_{2peak} , sports participation, enjoyment in sports competitions, participation in unorganized activities, activity level and overweight, the adolescents who reported sports participation for each of the three measurement times were selected to achieve a higher number of respondents (14 years old, $N = 93$, 47 boys and 46 girls; 16 years old, $N = 75$, 43 boys and 32 girls; 19 years old, $N = 48$, 29 boys and 19 girls).

The subjects were fully informed about the protocol before participating in this study. Approval to use the data and conduct the study was given by the Norwegian Social Science Data Service (NSD) and the regional Norwegian ethics committee.

Procedures

A questionnaire was administered and VO_{2peak} , height, weight and were tested for each subject at the same time, but the data collection took place over two months (April–May) at 14 years of age, 9th grade, 16 years of age, first year at high school, second year at high school and third year of high school. All tests and measurements were performed in the same room, with the same test procedures, the same test equipment and the same test leader for all of the six test measures. Height was measured with a measuring tape that was permanently connected to the wall. The subjects did not wear shoes and the height was registered to the nearest 0.5 cm. Weight was measured using a Seca digital weighing scale with an accuracy to 0.1 kg. Body mass index was calculated in accordance with international standards (Cole, Bellizzi, Flegal, & Dietz, 2000). The cutoff for overweight was set at 22.62 kg for boys and 23.34 kg for girls at 14 years of age, 23.90 kg for boys and 24.37 kg for girls at 16 years of age and 25 kg for all adolescents at 19 years of age.

Oxygen uptake measurements were carried out on a treadmill, the Woodway S5 (Woodway Inc., Waukesha, USA). The number of persons in the test laboratory was limited to the test leader and one student to keep the oxygen level in the air stable and to avoid disturbances in the tests. Beforehand, the adolescents had been given information about the test conditions (avoid strenuous exercise the day before, eat 2–3 hours before the test, have a “light” breakfast and by all means participate in physical exercise [PE] before the test, but only light activity). The test outfits were running shoes, shorts or training pants and a T-shirt or jumper. The OxyCon Pro (Erich Jaeger GmbH, Hoechberg, Germany) was used to measure oxygen uptake. An incline of 10.5% was used on the treadmill according to the test procedures. This was to prevent the running technique being a factor limiting the peak oxygen uptake. Before the test, the adolescents were asked how much they trained. Girls who did not train or were obese started at a speed of 4 km/h; those who trained 1–2 times a week started at a speed of 5 km/h; those who trained 3–4 times a week started at a speed of 6 km/h. For boys, the same categories were used, but at a 1 km/h higher speed. The speed on the treadmill was increased by 1 km/h every minute, except sometimes at the end of the test, when the speed was increased by only 0.5 km/h. The criterion for the highest maximal oxygen uptake was a flattening/decrease in the O₂ curve with increasing speed (respiratory exchange ratio [RER] > 1.00). The average of the two highest measurements occurring right after one another was recorded as the peak oxygen uptake. The test lasted 5–6 min.

The adolescents ended the test protocol by answering a questionnaire used by Aspvik, Sæther, and Ingebrigtsen (2008), which examined the degree of enjoyment in PE on a scale through questions concerning enjoyment of sports and sports competitions: “How would you rate your enjoyment in sports workouts?” and “How would you rate your enjoyment in sports competitions?” The response options were: very good, good, poor and very poor. We also included a question about PA level (“How many days a week are you physically

active to a level at which you become sweaty or out of breath?”). The response options were: never, 1 day a week, 2–3 days a week, 4–5 days a week and 6–7 days a week. Finally, questions about participation in organized sport and unorganized PA sport were included: “How often do you participate in sport?” and “How often do you participate in unorganized physical activity?” The response options for both of these questions were: never, rarely, 1–3 days a month, 1 day a week, 2–3 days a week, 4–6 days a week and every day.

Statistical analysis

The assumption for parametric testing was not fulfilled and the Friedman non-parametric test was used to examine if the adolescents’ level of enjoyment in PE and organized sport changed over the three measurement times, while the Wilcoxon signed rank non-parametric test was used for post hoc analyses between the three pairs, with Bonferroni corrections. The Mann-Whitney U test was used to analyse differences in enjoyment in organized sport for the 47 subjects included at 14 years of age and the 46 measured at 14 years of age, but who dropped out. Spearman’s correlation was used to identify bivariate associations between enjoyment in training and competitions and the independent variables respectively. Statistical significance was set at $p \leq 0.05$. Statistical analyses were performed in SPSS statistical software version 24 (SPSS Inc., Chicago, IL, USA).

Results

Evolution of enjoyment in organized sport training and competitions

Table 1. Reported enjoyment in organized sports training among boys and girls at 14 years of age, 16 years of age and 19 years of age (%).

	Very poor	Poor	Good	Very good	N
Boys, 14 years of age				100	26
Girls, 14 years of age				100	21
Boys, 16 years of age			11.5	88.5	26
Girls, 16 years of age			11.1	88.9	21
Boys, 19 years of age			20	80	26
Girls, 19 years of age			30	70	21

The results presented in Table 1 show significant differences in enjoyment of organized sport training across the three measurement periods ($\chi^2_2 = 11.1$, $p = 0.004$). Further analyses show significantly lower enjoyment of organized sports training at 19 years of age than at 14 years of age ($Z = -3.00$, $p = 0.009$). However, there are no significant changes in enjoyment of organized sports training between 14 years of age and 16 years of age ($Z = -2.24$, $p = 0.075$), or between 16 years of age and 19 years of age ($Z = -1.14$, $p = 0.471$).

Statistical analyses show differences in enjoyment of organized sports training at 14 years of age between the 47 included in the analysis and the 46 measured at 14 years of age, but who dropped out ($Z = -3.580$, $p = 0.000$). While all the adolescents included in the analyses reported very good enjoyment of organized sports training at 14 years of age, 73.9% of the dropout adolescents reported very good enjoyment of organized sports training and 26.1% reported good enjoyment of sports training.

Table 2. Reported enjoyment in relation to sports competitions among boys and girls at 14 years of age, 16 years of age and 19 years of age (%).

	Very poor	Poor	Good	Very good	N
Boys, 14 years of age			15.4	84.6	26
Girls, 14 years of age			23.5	76.5	21
Boys, 16 years of age			20	80	26
Girls, 16 years of age			22.2	77.8	21
Boys, 19 years of age			29.2	70.8	26
Girls, 19 years of age		15	10	75	21

The results presented in Table 2 show no significant differences in enjoyment related to sports competitions over the three measurement periods ($\chi^2_2 = 4.1$, $p = 0.200$).

Statistical analyses show differences in enjoyment in relation to sports competitions at 14 years of age between the 47 subjects included in the analysis and the 46 measured at 14 years of age, but who dropped out ($Z = -2.8$, $p = 0.005$). While 81.4% of the adolescents included in the analyses reported very good enjoyment and the others reported good enjoyment of sports at 14 years of age, only 54.3 % of the dropout adolescents reported very good enjoyment of sports, 37% reported good enjoyment and 8.7% reported poor enjoyment of sports competitions.

Indicators of enjoyment in sports training and competitions

Table 3 shows the baseline characteristics of the participants included in the Spearman correlation analyses at each of the three measurement times.

Table 3. Descriptive characteristics of the participants

	14 years of age (n = 93)	16 years of age (n = 75)	19 years of age (n = 48)
Enjoyment in organized sport training			
Not very good (%)	13.5	16.7	22.7
Very good (%)	86.5	83.3	77.3
Enjoyment in sport competitions			
Not very good (%)	32.6	30.9	25.6
Very good (%)	67.4	69.1	74.4
Gender			
Girls (%)	49.5	42.7	39.6
Boys (%)	51.5	57.3	60.4
Participation in organized sport			
Less than weekly (%)	12.5	9.9	23.4
Weekly (%)	87.5	90.1	76.6
Participation in unorganized physical activity			
Less than weekly (%)	12.5	26	29.8
Weekly (%)	87.5	74	70.2
Activity level			
Less than 4 days a week (%)	57.3	41.7	41.3
4 days a week or more (%)	42.7	58.3	58.7
Overweight			
Not overweight (%)	89.2	83.3	76.6
Overweight (%)	10.8	16.7	23.4

Table 4. Spearman correlations between enjoyment of organized sports training and possible indicators of enjoyment of sports training.

Possible predictors of enjoyment in sport	Enjoyment of sports training at 14 years of age ^a (n = 93)	Enjoyment of sports training at 16 years of age ^b (n = 75)	Enjoyment of sports training at 19 years of age ^c (n = 48)
Gender	-.110	.013	.100
Frequency of participation in sport	.461**	.118	.117
Enjoyment of sports competitions	.394**	.418**	.560**
Participation in unorganized physical activity	.061	.288*	.132
Physical activity level	.322**	.227	.032
VO _{2peak}	.138	.199	.196
Overweight	-.086	.000	-.063

^a Correlated against the independent variables (predictors) at the same measurement time at 14 years of age.

^b Correlated against the independent variables (predictors) at the same measurement time at 16 years of age.

^c Correlated against the independent variables (predictors) at the same measurement time at 19 years of age.

* Significant association at the $p < 0.05$ level.

** Significant association at the $p < 0.01$ level.

Table 4 shows that three of the seven independent variables present bivariate associations with enjoyment of sports training at 14 years of age. At 16 years of age, two of the seven independent variables show bivariate associations with enjoyment of sports training, while only one of the seven independent variables shows bivariate associations with enjoyment of sports training at 19 years of age. Table 4 shows that the reported enjoyment of sports training increases with increased enjoyment of sports competitions at all three measurement times. Furthermore, reported enjoyment of sports training increases with the PA level at 14 years of age and participation in unorganized PA at 16 years of age.

Table 5. Spearman correlations between enjoyment and possible indicators of enjoyment in sports competitions.

Possible predictors of enjoyment in sports competitions	Enjoyment of sports competitions at 14 years of age ^a (n = 93)	Enjoyment of sports competitions at 16 years of age ^b (n = 75)	Enjoyment of sports competitions at 19 years of age ^c (n = 48)
Gender	.198	.077	.012
Participation in sport	.448**	.204	.302*
Participation in unorganized physical activity	.018	-.008	.121
Physical activity level	.309**	.156	-.081
VO _{2peak}	.412**	.201	.151
Overweight	.096	.010	.055

^a Correlated against the independent variables (predictors) at the same measurement time at 14 years of age.

^b Correlated against the independent variables (predictors) at the same measurement time at 16 years of age.

^c Correlated against the independent variables (predictors) at the same measurement time at 19 years of age.

* Significant association at the $p < 0.05$ level.

** Significant association at the $p < 0.01$ level.

Table 5 shows that three of the six independent variables present bivariate associations with enjoyment of sports competitions at 14 years of age. At 16 years of age, none of the seven independent variables show bivariate associations with enjoyment of sports competitions, while only participation in sport shows bivariate associations with enjoyment of sports competitions at 19 years of age. While correlation analyses show that enjoyment of sports competitions increases with the frequency of sports participation, PA level and VO_{2peak} at the age of 14, no such associations are found at 16 years of age. At 19 years of age, enjoyment of sports competitions increases only with the frequency of sports participation. Gender, participation in unorganized PA and overweight show no associations with enjoyment of sports competitions at any measurement time.

Discussion

Evolution of enjoyment in sport from a longitudinal perspective

The results show that adolescents in general experience very good and good levels of enjoyment in organized sport, both in training and competitions, during lower secondary school and high school. Another study with the same participants showed very good and good enjoyment of PE (Lagestad, 2017), which is not surprising because several studies have found that adolescents who participate in sports report more enjoyment of PE (Biddle, Atkin, Cavill, & Foster, 2011; Flagestad & Skisland, 2008; Lagestad, 2017; Larson & Redelius, 2008; Säfvenbom, Haugen, & Bulie, 2014). In other words, the findings support other research which indicates that adolescents participating in PA in school and leisure time in general experience high levels of enjoyment. Harrist and Witt (2015) point out that one of two main aspects influencing adolescents' participation in sport is enjoyment and the results are positive taking this into account.

However, the analyses show that reported enjoyment in organized sports training decreases during from 14 to 19 years of age – in contrast to enjoyment related to competitions which stays the same. Research has shown that dropout from organized sports increases during adolescence (Bélanger et al., 2009; Riddoch et al., 2004; Seippel et al., 2011; Telama & Yang, 2000). The decreasing levels of reported enjoyment among adolescents who still participate in sport in this study, may contribute to explaining these dropout rates. This argument is supported by the finding of significant differences in enjoyment of sports in the pre-test, both related to training and competitions, between the adolescents who did not drop out from organized training and those who did drop out, with the dropout adolescents reporting lower levels of enjoyment. This finding is reasonable because enjoyment (wellbeing) is an important factor related to optimism concerning the future and happiness in the present, *as pointed out by McNulty and Fincham (2011)*. In the introduction, we pointed to research indicating that a positive attitude toward sport is important to promote an active lifelong lifestyle (Aarnio et al., 2002; Kjønneksen et al., 2009; Telama et al., 2006). Preventing dropout by creating very high levels of enjoyment in sports training seems to be a good strategy.

The results show that the decrease in adolescents reporting participation in sport is considerable between the ages of 14 and 19. While 93% of the participants recruited to the study participated in organized sport at 14 years old, 75% participated in sport at 16 and (only) 48% participated at 19. These repeated measures findings, following the same adolescents, are supported by descriptive data from both longitudinal and non-longitudinal studies (Bélanger et al., 2009; Riddoch et al., 2004; Seippel et al., 2011; Telama & Yang, 2000). Both Hjelseth (2016) and Patriksson (1988) argue that dropout from organized sport is not necessarily a problem for society in general. However, numerous studies have shown that participation in sport during adolescence is positively related to physical, social and psychological benefits (Aarnio et al., 2002; Anderssen et al., 2007; Eime et al., 2013; Khan et al., 2012; Perkins et al., 2004; Santos et al., 2005; Telama et al., 2006). Moreover, from a health perspective, decreasing participation in sport is somehow problematic.

Factors that correlate with enjoyment in organized sport

As highlighted in the introduction, sports should ideally be organized in such a way that all groups of adolescents experience high levels of enjoyment. The finding of no group differences based on no associations between enjoyment in organized sport and gender, VO_{2peak} or overweight (except for some moderate associations between enjoyment and sports competitions in eighth grade) is positive from this perspective. In the introduction, we argued that overweight and cardiorespiratory levels may affect the level of enjoyment because there are strong negative correlations between overweight and participation in sport (Fernández et al., 2013; Mustelin et al., 2011; Petracovschi, 2012) and adolescents with overweight are less physically active and fit compared with other adolescents (Huttunen et al., 1986; Marques, Pizarro, Figueiredo, Mota, & Santos, 2013; Marta et al., 2012; Pfeiffer et al., 2007), perform lower on physical tests (Fernández et al., 2012; Marta et al., 2012) and are more depressed in general (Latty et al., 2007). However, the results show that our hypothesis was wrong. Furthermore, we also hypothesized that adolescents with lower levels of cardiorespiratory fitness would experience lower levels of enjoyment in sport because low performance has been demonstrated to be one of the three main reasons for dropping out of sport (Patriksson, 1988) and lower levels of PA and physical performance (Aires et al., 2012; Ekelund et al., 2001; Marta et al., 2012), will have a negative effect on enjoyment. Fortunately, our hypothesis was wrong. Finally, gender is not found to be associated with enjoyment – a result that indicates that girls' lower level of activity and participation in sport (Asfour et al., 2016; Bengoechea et al., 2013; He et al., 2013; Horst et al., 2007; Krange & Strandbu, 2004; Santos et al., 2005) may not be explained by the level of enjoyment.

The findings show associations between some factors and enjoyment in sports training and competitions. It can be argued that a main finding is the strong association between enjoyment of sports and enjoyment in sports competitions. The results show that reported enjoyment in sports training increases with increased enjoyment in sports competitions at all three measurement times. In relation to participation in organized sports, Jakobsson (2014) found enjoyment in competitions to be especially important for adolescents – a finding that supports the results presented here. Also Wiersma (2009) highlighted that taking part in competitions is a major source of enjoyment in sport. These two studies and the findings reported here indicate that there is a close association between enjoyment of competitions and enjoyment of sports as a whole. When adolescents get older, competitions becoming increasingly serious, and requires higher perceptions of competence (Crane & Temple, 2015). One might argue that such a close association between enjoyment in training and enjoyment in competitions might partly explain dropout from organized sport and that it is reasonable to suggest that adolescents who do not enjoy competitions are more vulnerable to dropping out of sport.

Strengths and limitations of the study

The major strength of the study is that it is based on a longitudinal design with the same participants, employing the same questions and tests every year, performed in the same room, and using the same test procedures, test equipment and test leader over all of the six test measures. Furthermore, many of the variables, such as VO_{2peak} , overweight and gender, are based on high-quality standard procedures.

However, there are several limitations to the study. The number of participants is somewhat low and there were several dropouts, especially in the longitudinal analysis. The statistical analyses also show that all the participants reported enjoying participation in sports training very much in eighth grade, whereas only 74% of the dropout participants reported enjoying participation in sports training very much in eighth grade – a significant difference. Furthermore, the activity level was measured using self-report data rather than objectively measured data, which would have been preferable. Another critical issue in the study is that enjoyment of organized sport in training and competitions was measured using a single question and not several questions. More questions would yield a wider measure of enjoyment as a phenomenon. However, we argue that answering the general questions “How would you rate your enjoyment at training in organized sport?” and “How would you rate your enjoyment in sports competitions?” provides a good operationalization of a psychological perspective examining enjoyment as the prevalence of positive attributes. Furthermore, other variables that are not included in this study may be of considerable importance related to enjoyment in sport, indeed more so than the variables included.

Conclusion

Examining the evolution of self-reported enjoyment in sports training and competitions among adolescents who participate in sports using a questionnaire, the results show that while enjoyment remains constant with regard to sports competitions, enjoyment of organized sports training decreases between the ages of 14 and 19. Furthermore, enjoyment of organized sports training increases with the frequency of sports participation, PA level and enjoyment of sports competitions at the age of 14, and by participation in unorganized PA and enjoyment of sports competitions at 16 years of age. At 19 years of age, enjoyment increases only by virtue of enjoyment in sports competitions. While correlation analyses show that enjoyment in competitions increases with the frequency of sports participation, PA level and VO_{2peak} at the age of 14, no such associations are found at 16 years of age. At 19 years of age, enjoyment in sports competitions increases only with the frequency of sports participation. Gender and overweight show no associations with enjoyment in training or competitions for any measure of time. The findings indicate that enjoyment of sport competitions is a main predictor of adolescents’ enjoyment of sports. Taking these results into consideration, it is appropriate to question whether such a relatively high correlation between enjoyment in sports training and competitions is preferable, when the goal is to prevent dropout from sport. The search of the literature indicates that there is a general lack of longitudinal studies on the evolution of enjoyment in sports among adolescents and a lack of analyses identifying which factors are associated with enjoyment in organized sport training and sports competitions. The findings contribute to more knowledge concerning the research area. Further studies should include more participants, more questions that examine different types of enjoyment, and also more variables that may be correlated with adolescents’ enjoyment of sport.

Acknowledgements

No financial interest or benefit has arisen from the direct applications of the research.

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