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## **Does sports club participation contribute to physical activity among children and adolescents? A comparison across six European countries**

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1 **Does sports club participation contribute to physical activity among children and**  
2 **adolescents? A comparison across six European countries**

3 **Running title:** Sports clubs participation and physical activity  
4

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29

30 **ABSTRACT**

31 **Aims:** Insufficient physical activity (PA) is one of the largest public health challenges of  
32 our time and requires a multisectoral public-health response. PA recommendations state  
33 that all children and adolescents should accumulate at least 60 minutes of moderate-to-  
34 vigorous PA (MVPA) daily and carry out vigorous PA (VPA) three times weekly. While  
35 participation in sports club activities is known to enhance the probability of reaching the  
36 recommended overall PA level, less is known about the contribution of sports club  
37 participation to VPA and few cross-national comparisons have been carried out.

38 The purpose of this paper is to study whether participation in sports club activities is  
39 associated with meeting the overall PA and VPA recommendations among children and  
40 adolescents across six European countries, namely Belgium (Flanders), Czech Republic,  
41 Finland, France, Ireland and Sweden. **Methods:** Analysis were carried out on existing  
42 self-reported national data sets using descriptive statistics and logistic regression.

43 **Results:** Results indicate that approximately two-thirds of children and adolescents take  
44 part in sports clubs activities in given countries. Sports club participants were more  
45 likely to meet the overall PA recommendations (OR 2.4-6.4). Sports club participants  
46 were also more likely to reach VPA recommendation (OR 2.8-5.0) than non-  
47 participants. **Conclusions:** The extent to which overall PA and/or VPA is gained  
48 through sports club participation versus other settings needs to be further studied. Still, it  
49 can be argued that sports clubs have an important position in PA promotion for younger  
50 populations.

51 **Key words:** guidelines and recommendations, physical activity, public health, sport,  
52 youth

53 **BACKGROUND**

54 There is strong evidence for the physical, mental and psychosocial benefits of physical  
55 activity (PA) [1, 2] and the need for a multi-sectoral public-health response to physical  
56 inactivity [3]. Global PA recommendations for health state that children and adolescents  
57 should achieve at least 60 minutes of moderate-to-vigorous intensity PA (MVPA), most  
58 of it aerobic, every day to improve cardiorespiratory and muscular fitness, bone health,  
59 and cardiovascular and metabolic health biomarkers [4]. Vigorous intensity PA (VPA)  
60 including muscle and bone strengthening activity should be incorporated at least three  
61 times weekly. It is also highlighted that amounts of PA greater than 60 minutes provide  
62 additional health benefits [4, 5].

63 International research has demonstrated that the majority of children and adolescents do  
64 not reach these PA recommendations. A recent overview on the PA of children and  
65 adolescents in 38 countries from all continents showed that on average sixty percent of  
66 children and youth worldwide fail to meet the international recommendations for PA  
67 [6]. About half of the countries reported that only a third or less of the children and  
68 adolescents met the PA guidelines and some countries reported even lower levels,  
69 highlighting an issue of insufficient PA during childhood across Europe.

70 Moreover, some universal trends in PA in relation to gender, age and family affluence  
71 need to be considered, where boys, younger age groups and children from high  
72 affluence groups reach the recommended level of PA more frequently than girls, older  
73 age groups and low affluence groups respectively [7]. This combined knowledge is  
74 alarming, particularly considering the health benefits of PA in regard to physical,  
75 mental, and social health, and in the prevention of non-communicable diseases [8].

76 Therefore, the World Health Organisation [4] and the European Commission [9] as well  
77 as national governments have set PA promotion as one of the priority aims in society,  
78 especially with respect to children and adolescents. As health should be promoted where  
79 people learn, work, play and love [10], PA should also be promoted in these different  
80 settings. One setting that is particularly suitable for promoting PA is the sports club who  
81 deliver organised sport to the 40-59% of children and adolescents in Europe who  
82 participate in sports clubs [6]. In spite of the high diversity of sports policies in different  
83 countries across Europe and in the population of sports clubs, it can be generalised that  
84 sports clubs represent the very core and the local suppliers of the many sports systems in  
85 this continent [11].

86 Participation in sports clubs can and should contribute to meeting PA guidelines. Some  
87 research has demonstrated that children and adolescents participating in sport at a sports  
88 club have higher levels of MVPA than non-participants [12]. However, some other  
89 recent findings in European countries have also indicated that not all sports club  
90 participants reach recommended PA levels [13, 14]. Among sports participants, boys are  
91 more likely to reach the PA guidelines for MVPA than girls [15] and there are also  
92 studies that show a positive relationship between sport participation and VPA [16, 17].

93 To date, no research has focussed on comparing overall PA levels and the additional  
94 assessment of VPA of sports club participants and non-participants across several  
95 European countries. Therefore, the purpose of this paper is to study whether  
96 participation in sports club activities is associated with meeting the overall PA and VPA  
97 recommendations among children and adolescents across six European countries with

98 some different characteristics, namely Belgium (Flanders), Czech Republic, Finland,  
99 France, Ireland and Sweden.

100

## 101 **METHODS**

102 Authors from six countries, belonging to the HEPA Europe: Sport Clubs for Health  
103 working group, identified relevant data sets, with data on sports club participation,  
104 overall PA and VPA among children and adolescents aged 11, 13 and 15 years old, with  
105 variations in Ireland (10-11 and 12-14 year olds) and Sweden (13 and 15 year olds).  
106 Apart from the Swedish data, (regional “Life and Health Young-survey” in Region  
107 Örebro County), all data are self report from national monitoring studies of large  
108 representative cross-sectional samples, and were gathered under the Health Behaviour in  
109 School-aged Children (HBSC) study in Belgium (Flanders), Czech Republic, France [18]  
110 and Ireland and the National Physical Activity Behaviour of Children and Adolescents  
111 (LIITU) study in Finland (Appendix 1).

### 112 *Variables*

#### 113 *Sports Club Participation*

114 Measures of sports club participation varied between countries (Appendix 1) but  
115 generally included sport/sports clubs in the question or as a response alternative. They  
116 were however made comparable when dichotomised into yes/no participation categories.

117

#### 118 *Overall Physical Activity (PA)*

119 The HBSC-study assessed participation in overall PA with the following question “*Over*  
120 *the past 7 days, on how many days were you physically active for a total of at least 60*  
121 *minutes per day? Please add up all the time you spent in physical activity each day.*” An  
122 introductory text to illustrate MVPA was set prior to the question: “Physical activity is  
123 any activity that increases your heart rate and makes you get out of breath some of the  
124 time. Physical activity can be done in sports, school activities, playing with friends, or  
125 walking to school. Some examples of physical activity are running, walking briskly,  
126 roller-skating, cycling, dancing, skateboarding, swimming, downhill skiing, cross-  
127 country skiing, football, basketball and baseball.” Response options included 0 to 7 days  
128 per week in data for Belgium, Czech Republic, Finland, France and Ireland. The  
129 categories were then dichotomized according to the fulfilment of PA recommendations  
130 (yes: seven days and no: less than seven days).

131 In Sweden the overall PA question was “*How much on average are you physically*  
132 *active per day (ex. walking, biking or doing sports)?*” The answer options were: “Less  
133 than 30 min”, “30-60 min”, or “More than 60 min”. The categories were then  
134 dichotomized according to meeting the PA guidelines (yes: more than 60 minutes and  
135 no: 60 minutes and less).

### 136 *Vigorous physical activity (VPA)*

137 Belgium, Czech Republic, France and Ireland used the HBSC study question on VPA:  
138 “*Outside school hours: how often do you usually exercise in your free time so much that*  
139 *you get out of breath or sweat?*”, with seven response categories: every day, 4 to 6 times  
140 a week, 2 to 3 times a week, once a week, once a month, less than once a month, never.

141 Finland used the following VPA question: “*Think about an ordinary week. In how many*  
142 *days does your physical activity include vigorous activity?*” with response options from  
143 0 to 7 days. An introductory text to illustrate the types of PA and determine the intensity  
144 level of VPA, “...any activity that increases your heart rate a lot and makes you out of  
145 breath substantially. Some examples of vigorous intensity physical activities are speedy  
146 plays and games and running or cross-country skiing”, was set prior to the question.

147 In Sweden the VPA question was formulated as: “*How often do you exercise in your*  
148 *leisure-time, more than 30 min so that you are short of breath/sweating?*” with answer  
149 options: Every day, 4-6 a week, 2-3 a week, once a week, 1-3 a month, less than once a  
150 month.

151 Because only Finnish data could be specific in relation to the proportion meeting the  
152 VPA guidelines of 3 times a week, the variable was dichotomized similarly for all  
153 countries to 1) at least 4 times a week and 2) at most 3 times a week.

#### 154 ***Data analysis***

155 Descriptive statistics, specifically frequencies, crosstabs and  $\chi^2$ -test were used to  
156 generate overall, and gender and age comparisons of sports club participation.

157 Crosstabs,  $\chi^2$ -test and binary logistic regression were carried out to determine the  
158 likelihood of sports club participants meeting the overall PA and VPA recommendations  
159 compared with non-participants. Country specific odds ratios were calculated to  
160 compare the risk of not meeting the overall PA and VPA recommendations (dependent  
161 variables) when participating in sports clubs versus not participating in sport clubs  
162 (independent variable), stratified by age and gender. An odds ratio higher than 1 means

163 that sports club participation increases the likelihood of meeting overall PA and VPA  
 164 recommendations. Data were analysed using IBM SPSS Statistics.

165

166 **RESULTS**

167 *Sports club participation*

168 Overall, two out of three (60-69%) children and adolescents participated in sports club  
 169 activities (Table 1). Boys were more active in sports club activities than girls in every  
 170 country (boys 61-76%, girls 49-66%). Equally, participation in sports club activities  
 171 decreased with age in each country; moving for example in Finland from 68% of 11  
 172 year olds to 48% of 15 year olds.

173 Table 1 Gender and Age Comparison of Sports Club Participation in %.

	Overall	Boys	Girls	p-value	11 yr	13 yr	15 yr	p-value
<b>Belgium</b> (n=2778-2794)*	67	71	62	<.001	73	67	61	<.001
<b>Czech Republic</b> (n=10 501)	62	70	55	<.001	66	64	57	<.001
<b>Finland</b> (n=5355)	60	61	59	ns	68	63	48	<.001
<b>France</b> (n=5975)	63	76	49	<.001	68	64	56	<.001
<b>Ireland</b> (n=6025)	66	75	59	<.001	52	48	-	ns
<b>Sweden</b> (n=4661-4717)*	69	72	66	<.001	-	73	64	<.001

174 \*Different number of respondents when comparing gender or age due to respondents not  
 175 answering either of the gender or age questions.

176

178 **Overall Physical Activity (PA)**

179 The PA recommendation of at least 60 minutes of daily MVPA in a week were met by  
 180 12-42% of children and adolescents (Table 2). The proportion meeting the overall PA  
 181 recommendation was higher among boys (18-47%) than girls (7-38%) and a decrease  
 182 with age was evident: 11-year-olds (15-37%), 13-year-olds (11-45%), and 15-year-olds  
 183 (9-39%).

184 Sports club participants (17-51%) met the recommendation for overall PA more often  
 185 than non-participants (3-22%) (Table 2), and subsequently were 2-6.4 times more likely  
 186 to meet the PA guidelines (Table 3). Among the sports club participants, boys met the  
 187 overall PA recommendation more often than girls in all countries. The odds of sports  
 188 club participants' meeting the PA recommendations increased with age when compared  
 189 with non-participants (Table 3).

190 Table 2 Overall and Gender proportions and comparison of sports club participants (SC)  
 191 and non-participants (Non-SC) meeting the overall PA recommendations.  
 192

	Overall	Boys	Girls	11 year	13 year	15 year	SC	Non- SC	p-value	SC boys	Non-SC boys	p-value	SC girls	Non-SC girls	p-value
<b>Belgium (n=2764)</b>	16	20	12	18	18	14	20	9	<.001	24	10	<.001	15	8	<.001
<b>Czech Republic (n=10 426)</b>	21	24	18	26	21	17	26	13	<.001	29	15	<.001	23	12	<.001
<b>Finland (n=5330)</b>	28	34	23	39	26	17	35	18	<.001	41	22	<.001	29	15	<.001
<b>France (n=5975)</b>	12	18	7	15	11	9	17	3	<.001	21	4	<.001	11	3	<.001
<b>Ireland (n=6025)</b>	33	40	25	37	29	-	37	22	<.001	45	27	<.001	29	20	<.001

Sweden (n=4565)	42	47	38	-	45	39	51	22	<.001	56	24	<.001	47	20	<.001
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193

194 Table 3 Odds ratios (OR) of Sports Club Participants meeting Recommendations for  
 195 overall PA and VPA; overall and gender- and age-stratifies  
 196

<b>Overall PA</b>	<b>Overall</b>	<b>95%CI</b>	<b>Boys</b>	<b>95%CI</b>	<b>Girls</b>	<b>95%CI</b>	<b>11 yr</b>	<b>95%CI</b>	<b>13 yr</b>	<b>95%CI</b>	<b>15 yr</b>	<b>95%CI</b>
<b>Belgium</b>	2.6***	2.0-3.4	2.8***	2.0-3.9	2.2***	1.5-3.2	1.7*	1.1-2.6	2.2**	1.4-3.6	4.7***	2.8-7.6
<b>Czech Republic</b>	2.4***	2.1-2.6	2.4***	2.0-2.8	2.2***	2.0-2.8	1.9***	1.6-2.3	2.2***	1.8-2.6	3.1***	2.5-3.8
<b>Finland</b>	2.4***	2.1-2.7	2.4***	2.0-2.9	2.3***	1.9-2.8	1.7***	1.4-2.1	2.2***	1.7-2.8	2.9***	2.2-3.0
<b>France</b>	6.4***	4.9-8.2	4.2***	3.0-6.0	6.7***	4.5-10.1	5.0***	3.4-7.3	6.6***	4.1-10.7	7.9***	4.7-13.2
<b>Ireland</b>	2.0***	1.8-2.4	2.2***	1.8-2.8	1.7***	1.4-2.0	1.9***	1.5-2.4	2.1***	1.8-2.5	-	-
<b>Sweden</b>	3.3***	2.8-3.9	3.6***	2.9-4.5	3.0***	2.4-3.8	-	-	3.4***	2.7-4.3	3.2***	2.6-3.9
<b>VPA</b>												
<b>Belgium</b>	3.1***	2.6-3.7	3.3***	2.6-4.2	2.7***	2.1-3.5	2.5***	1.8-3.4	3.0***	2.1-4.1	3.8***	2.9-5.0
<b>Czech Republic</b>	3.1***	2.8-3.3	3.3***	2.9-3.8	2.7***	2.4-3.0	2.6***	2.2-3.1	3.1***	2.7-3.6	3.4***	2.9-3.9
<b>Finland</b>	3.5***	3.1-4.0	4.0***	3.4-4.8	3.1***	2.6-3.6	2.2***	1.8-2.7	4.2***	3.4-5.2	4.7***	3.7-5.8
<b>France</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Ireland</b>	2.8***	2.5-3.3	3.2***	2.7-3.9	2.4***	2.1-2.7	2.3***	1.9-2.7	3.4***	2.9-3.9	-	-
<b>Sweden</b>	5.0***	4.2-6.0	5.6***	4.4-7.2	4.3***	3.3-5.6	-	-	4.9***	3.7-6.4	5.2***	4.1-6.5

\* p&lt;.05, \*\* p&lt;.01, \*\*\* p&lt;.001

198

199

200 ***Vigorous physical activity (VPA)***

201 In total, 30-62% of the children and adolescents engaged in VPA at least four times  
202 weekly (Table 4), with a higher prevalence among boys (43-68%) than in girls (18-  
203 57%). Among sports club participants, 47-70% reported VPA at least 4 times a week,  
204 compared to 17-45% of non-participants (Table 4). In all countries, among the sports  
205 club participants, boys met the VPA recommendation more often than girls. Sports club  
206 participants' odds for meeting the recommendation increased with age when compared  
207 with non-participants (Table 3).

208 Table 4 Overall and Gender proportions and comparison of sports club participants (SC)  
209 and non-participants (Non-SC) meeting the Recommendation for VPA  
210

	Overall	Boys	Girls	11 year	13 year	15 year	SC	Non- SC	p- value	SC boys	Non- SC boys	p- value	SC girls	Non- SC girls	p-value
<b>Belgium (n=2765)</b>	42	49	33	-	-	-	51	25	<.001	58	30	<.001	41	21	<.001
<b>Czech Republic (n=10 455)</b>	38	43	33	38	40	37	47	23	<.001	51	24	<.001	43	22	<.001
<b>Finland (n=5323)</b>	40	43	38	44	41	35	52	23	<.001	55	23	<.001	48	23	<.001
<b>France (n=5975)</b>	30	43	18	37	29	24	57	-	-	36	-	-	49	-	-
<b>Ireland (n=6025)</b>	62	68	57	66	57	-	70	45	<.001	75	48	<.001	65	44	<.001
<b>Sweden (n=4598)</b>	40	46	34	-	40	39	50	17	<.001	56	19	<.001	43	15	<.001

211

212

213 Sports club participants were more likely to meet the VPA recommendation (OR 2.8-  
214 5.0) than non-participants in the countries involved in the study (Table 3). The  
215 likelihood of meeting recommendations for VPA was higher among boys who were  
216 members of sports clubs than for their female counterparts compared with those who did  
217 not take part in sport (Table 3).

218

## 219 **DISCUSSION**

220 Sports club participation among children and adolescents was high (60-69%) in all  
221 featured countries with these sport participants more likely to meet the PA  
222 recommendations than non-participants. This clearly emphasizes the role and  
223 importance of sports clubs as a setting for enabling children and adolescents to achieve  
224 recommended levels of PA. These results also underline that despite a broad variety of  
225 sport systems and policies in the different countries, sports clubs can be recognized as a  
226 PA promoting setting [11]. Results of the 2017 Eurobarometer on Sport and physical  
227 activity also showed that 74% of European citizens (people 15 years and older) are  
228 satisfied with the opportunities to be physically active that sports clubs and other local  
229 providers offer [19]. As such, the wide reach of sports clubs demonstrates the societal  
230 significance of sport and reinforces the ten-year-old call by the European Commission  
231 for better recognition and more actions by the sports sector for PA promotion [9]. The  
232 results of this study both support the positive contribution of sports clubs to PA and  
233 highlight shortcomings that still need to be tackled, as there is still a significant

234 proportion of sports club participants who do not meet the recommendations for PA,  
235 most notably among girls.

236 The findings of this study are consistent across all countries involved; sports club  
237 participants are more likely to meet the recommendations for overall PA. These results  
238 are in line with earlier research [12]. Furthermore, sports clubs participants achieved the  
239 VPA recommendations more definitively across all countries of the study which earlier  
240 studies [16, 17] have been able to conclude for only two single countries. In this  
241 international study, results are remarkably consistent across the countries, despite wide  
242 differences in geography, socio-economy, culture and climate [20], as well as varying  
243 sport systems [11].

244 Despite these promising overall results, many sports club participants did not reach  
245 recommendations for PA. Related rates ranged from 17% in France to 51% in Sweden  
246 for overall PA and between 47% and 70% in the Czech Republic and Ireland  
247 respectively for VPA. The better outcome for VPA and cross-country variation may be  
248 explained by two reasons. Firstly, the VPA recommendation is a minimum of three  
249 times per week, which may be more reflective of how youths participate in sport;  
250 several times per week but not every day, which is inherent in the overall PA guidelines.  
251 Secondly, the most popular sports in these countries (e.g. gaelic games in Ireland, soccer  
252 in France, Finland and Sweden) are high action ball sports and thus likely classified as  
253 vigorous intensity PA.

254 There are other possible explanations for why many sports participants did not meet PA  
255 guidelines. Children and adolescents spend large proportions of time during organized  
256 sport either passive or in light physical activity [21]. The delivery of sport by coaches

257 could therefore impact on opportunities for MVPA during training and games [22].

258 Secondly, in sport, recovery is important and may amount to one or even two rest days  
259 per week likely impacting the daily aspect of recommendations for PA [13].

260 At the same time, it is important to consider how to improve sports contribution to PA;  
261 there are indicators that some sports clubs have increased the volume of activity sessions  
262 in response to low PA, but there is a concern that an increased volume of training may  
263 lead to drop out from sports [23]. In this analysis, the decrease of participation with age  
264 was already high in all countries, most notably in Finland (20% drop between 11-15  
265 years) and is in line with previous findings [23].

266 Furthermore, consideration of sport types is needed to identify how different sports  
267 contribute to PA and to investigate previous findings that have shown that those  
268 engaging in multiple sports meet the MVPA and VPA recommendations more often  
269 than those who specialise in one sport [24]. Unfortunately, it was not possible to report  
270 the frequency of training and type of sport practiced in this analysis due to lack of  
271 available data.

272 A further notable finding in this analysis is that despite the proportion of those meeting  
273 PA guidelines decreasing with age, the likelihood of sports clubs participants meeting  
274 the recommendations for both overall PA and VPA increases with age. This emphasises  
275 the importance of the sports club in combatting age related declines in PA. Clubs have  
276 to consider how they can recruit more children and adolescents to sport but equally the  
277 prevention of drop out from sport and decreasing participation in PA should become a  
278 greater priority for sports clubs and those involved in the promotion of PA. In practice,  
279 this may mean more variation in the club activities and a greater consideration of the

280 influence of coaches' behaviours on youth [25] with specific strategies for female and  
281 minority sub groups [26, 27].

282 Another important finding of this study is that boys reported higher participation in sport  
283 than girls and also that those boys who participate in sport are more likely to reach PA  
284 guidelines than their female counterparts. These gender differences are in line with  
285 previous findings [15]. For sports clubs, this suggests a need to acknowledge varying  
286 sports preferences among girls and to develop sports club activities that focus on  
287 participation, fun and skill development which may appeal to those girls who are not  
288 drawn to traditional team sports or the competitive sports environment [22, 28].

289 Considering the results from odds ratio analysis, sports clubs could be a setting for  
290 population level efforts to increase the likelihood of meeting overall PA and VPA  
291 recommendations. Participation in sports clubs could be considered as a protective  
292 factor from a public health point of view, and attention should be given to those children  
293 and adolescents who are not participating in sports clubs. These most physically passive  
294 youths are at the same time the most challenging ones to be activated and likely need  
295 professional and long-term assistance, which would call for actions by the health sector  
296 to supplement the efforts of their sporting counterparts. However, despite strong  
297 political will for inter-sectoral collaboration between sport and health sectors, several  
298 challenges for implementation have been identified, mostly around the level of  
299 understanding of the mission, core-business and main outcomes of the other sector [29].  
300 Moreover, as sports club activities are often based on voluntary civil activity with  
301 limited capacity and resources, it would be over-optimistic to argue a much wider reach  
302 for sport. To overcome these barriers, Kokko et al. [30] have proposed the concept of a

303 health promoting sports club, in which health is promoted comprehensively through  
304 sport using a settings-based approach. These health promotion activities may promote  
305 health [31], but also may support the recruitment and retention of participants in sports  
306 clubs, linking strategies to promote sport and PA to issues such as integration and  
307 equality. This, in turn, would strengthen the societal significance of sports clubs and  
308 enhance their potential to promote PA and health [30, 32]. Future research has to be  
309 encouraged on the implementation of such aims, and sports clubs and coaches' motives,  
310 barriers and capacities for implementation [30].

311

312

### 313 *Limitations and future research directions*

314 Some limitations need to be taken into account when interpreting the findings of the  
315 present study. Despite all data sets, except Sweden (who does not include the sports  
316 clubs question in the HBSC survey), being nationally representative, they were cross-  
317 sectional self-reports. Therefore, the respondent evaluations might be sensitive to social  
318 desirability and reporting biases. The cross-sectional data provides descriptive  
319 information and associations between some particular variables, but no causal  
320 relationships can be inferred. The difference in measurement of participation in a sports  
321 club and in PA affected the accuracy of data reductions to comparable variables and  
322 limited the inclusion of other studies, which would have ensured better cross-national  
323 comparisons. In this study VPA is measured as at least 4 times a week compared to the  
324 recommendations 3 times a week. Despite this higher proportions for VPA than overall  
325 PA were observed in this study.

326 Furthermore, the influence of others variables, like family affluence or health  
327 biomarkers, could help to better understand the universality of the results and the  
328 comparative impact of individual versus environmental factors. The contribution of  
329 different types of sport to meeting the PA recommendations for health should **also** be  
330 further examined. The lack of large scale studies using objective measures of PA and the  
331 difficulty of comparison between PA measurement instruments used, has limited the  
332 comparison between countries. Future large scale and cohort studies should consider  
333 probing sports club participation, in terms of sport practiced, time spent within sport  
334 clubs, and quantity and content of training sessions.

335

336

### 337 **CONCLUSIONS**

338 Sports clubs are an important leisure time setting for children and adolescents, reaching  
339 two-thirds of the population group in this analysis. Sports club participation has a  
340 positive association with overall PA, and VPA. However, this contribution varies across  
341 countries and is limited among girls. National sports organisations and clubs require  
342 support and direction to harness the potential of sport to improve the overall activity  
343 habits of all young people.

344

### 345 **Disclosure of interest**

346 The authors report no conflicts of interest.

347



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