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## Abstract

**Background:** Regular physical activity improves physical and mental health, yet children's physical activity levels were low in England's 2014 Report Card. Within this paper, we update the 2014 Report Card to assess current information for the nine indicators of physical activity.

**Methods:** A search for nationally representative data on nine indicators of physical activity was conducted and the data were assessed by an expert panel. The panel assigned grades (i.e. A, B, C, D, F, or INC (incomplete)) to each indicator based on whether children across England were achieving specific benchmarks. The 2016 Report Card was produced and disseminated.

**Results:** The following grades were awarded: Overall Physical Activity Levels: D-; Organized Sport Participation: D; Active Play: INC; Active Transportation: C-; Sedentary Behaviours: INC; Family and Peers: INC; School: B+; Community and the Built Environment: B; Government Strategies and Investment: INC.

**Conclusions:** The grades have not improved since the 2014 Report Card and several gaps in the literature are still present. While children's physical activity levels remain low alongside competing sedentary choices, further national plans and investment with local actions are urgently needed to promote physical activity especially via active play, active transport, and family support.

**Key words:** exercise, policy, sedentary behavior, adolescent guidelines and recommendations, public health

21

## Introduction

22 According to government recommendations, children in the United Kingdom (UK) aged 5-18  
23 years should be engaging in moderate-to-vigorous intensity physical activity (MVPA) for at least  
24 60 minutes every day.<sup>1</sup> However, children's physical activity (PA) levels appear to be low. One  
25 recent estimate reported that only 9% of boys and 2% of girls achieved sufficient levels of  
26 objectively measured PA.<sup>2</sup> Given the health risks<sup>3-5</sup> and the economic costs associated with  
27 physical inactivity,<sup>6</sup> it is important to understand the prevalence of PA and sedentary behaviour  
28 among children and youth across England, including the extent to which PA is supported by  
29 government policy and the built environment.

30 Active Healthy Kids England was established in 2014 with the aim of providing a 'state of the  
31 nation' resource by creating England's first Report Card on Physical Activity for Children and  
32 Youth.<sup>7</sup> Several gaps in the literature were identified and PA levels were generally low despite  
33 there being evidence of sufficient provision for PA in England.<sup>7</sup>

34 The purpose of the present paper is to discuss the results of the 2016 Report Card on Physical  
35 Activity for Children and Youth. Specifically, we update the 2014 Report Card via the use of  
36 newly available data, including published work from a variety of academic and non-academic  
37 sources (e.g., from government and non-government organisations).

38

39

## Methods

40 Active Healthy Kids England consists of an expert panel, including several academics from five  
41 Universities across England, and a representative involved in research within a leading non-  
42 governmental organisation (Youth Sport Trust; YST). The lead author identified key articles and  
43 synthesised the evidence from a range of national surveys, published from 2013-2016. The lead

44 author was also responsible for writing the Report Card and additional resources (e.g., website  
45 content). All members contributed to the grade assignment process by providing expertise in  
46 their relevant field. In addition, the second author was responsible for creating a media and  
47 dissemination strategy with assistance from the YST (fifth author).

48 Nine indicators of PA were assessed: 1) Overall Physical Activity Levels, 2) Organized Sport  
49 Participation, 3) Active Play, 4) Active Transportation, 5) Sedentary Behaviours, 6) Family and  
50 Peers, 7) School, 8) Community and the Built Environment, 9) Government Strategies and  
51 Investment. Data used to inform the grades for these indicators were provided from several  
52 national surveys including the Health Behaviour in School Aged Children Study (HBSC),<sup>8</sup> the  
53 Health Survey for England (HSE),<sup>9</sup> the Millennium Cohort Study (MCS),<sup>10,11</sup> the Taking Part  
54 Survey (TPS),<sup>12</sup> the National Travel Survey (NTS),<sup>13</sup> and the YST National PE and Sport  
55 Survey.<sup>14</sup> Reports from the government and the Office for Standards in Education, Children's  
56 Services and Skills (Ofsted) were also referred to throughout, as were regional datasets and  
57 reports from other organisations when data were not available from national surveys.

58 The grade assignment meeting took place in April 2016 where members of the expert panel  
59 assessed the available evidence, and assigned grades to each indicator once agreement had been  
60 reached. The quality of the available data was considered by taking into account the sample size,  
61 age range of participants, year of data collection, the reach of the sample (i.e., whether data were  
62 collected regionally or across England), and the measures used to collect data. Other factors were  
63 considered in the grade assignment, including trends in PA behaviours and the presence of any  
64 disparities between groups of children (e.g., age, gender, and ethnic differences). When such  
65 differences occurred, a + or – grade was given to reflect this. The following grade boundaries  
66 were used: A: 81%-100%, B: 61%-80%, C: 41%-60%, D: 21%-40%, F: 0-20%. An incomplete

67 (INC) grade was assigned where insufficient data were available or due to the absence of a  
68 suitable benchmark.

69

70

### **Results**

71 England's 2016 Report Card is the second iteration of a systematic assessment of PA among  
72 children and youth. The grades and benchmarks for each indicator are presented in Table 1, and  
73 the front cover is shown in Figure 1. No improvement in any indicator has been made since the  
74 2014 Report Card. For several indicators (Overall Physical Activity Levels, Organized Sports  
75 Participation, Active Transportation, and Schools), the grade has declined, whereas for others  
76 (Active Play, Sedentary Behaviours, Family and Peers, Community and the Built Environment,  
77 Government Strategies and Investment), the grade remains the same.

78

79

### **Discussion**

80 The expert panel decided to focus the 2016 theme and front cover on informal outdoor PA. The  
81 benefits of informal activity, such as active play and active transport, including time spent  
82 outdoors in relation to PA are well documented.<sup>15-17</sup> Yet the proportion of children who walk to  
83 school has declined since 1995/97,<sup>18</sup> and less than 50% of children use active means to travel to  
84 non-school destinations.<sup>11,19</sup> Furthermore, active play typically occurs outside,<sup>20</sup> but it would  
85 appear that children spend less time outdoors now than their parents did as they have less  
86 'freedom to roam'.<sup>21,22</sup> Future research is therefore needed on informal outdoor PA, especially  
87 given that time spent indoors may largely consist of engaging in sedentary pursuits.<sup>23</sup>

88

**89 Overall Physical Activity Levels: D-**

90 A grade of D- was assigned to children's overall PA levels because boys and girls are  
91 consistently within the D and F grade boundaries respectively, according to self-reported data  
92 from a number of surveys. For example, according to the HBSC, 22% of boys and 15% of girls  
93 aged 11, 13 and 15 years are achieving 60 minutes of MVPA per day.<sup>8</sup> Similar figures were  
94 reported in the HSE (21% of boys and 16% of girls aged 5-15 years),<sup>9</sup> and the UK Household  
95 Longitudinal Study (35.8% of boys and 21.8% of girls aged 10-15 years).<sup>24</sup> Even lower levels  
96 were reported among 15 year olds specifically in the What About Youth Survey (18% of boys  
97 and 9% of girls).<sup>25</sup> The grade has therefore declined since the 2014 Report Card, in which a  
98 grade of C/D was awarded,<sup>7</sup> though this may in part be due to a lack of available data on children  
99 younger than 11 years old. There is also a distinct lack of objective data available to grade this  
100 indicator, though existing guidelines were developed using self-reported estimates of PA which  
101 raises the question of whether current guidelines are suitable given that objective estimates of PA  
102 tend to show much lower PA levels. Despite this, these findings emphasise the need for regular  
103 monitoring of children's PA levels, using objective measures on a wide age range of children and  
104 youth, in order to track changes in PA behaviour over time.<sup>7</sup>

**105 Organized Sport Participation: D**

106 Although data from the Active People and Taking Part Surveys show that > 70% of children and  
107 youth were doing sport at least once a week,<sup>12,26</sup> this may include sport inside of school and was  
108 therefore not used to inform the grade. On examination of the data for those involved in  
109 organized sport outside of school hours the figures are lower. For example, 34.3% of 5-15 year  
110 olds reported doing organized sport outside of school; only 27.4% of 11-15s were members of an  
111 external sports club and only 19.2% played for a sports team.<sup>12</sup> Yet again, a higher proportion of

112 boys than girls are engaged in organized sport (35% vs. 21%).<sup>27</sup> Aside from sport, 39% of 8-11  
113 year olds participate in organized leisure-time activities once or twice a week and 20% do so  
114 every day or almost every day.<sup>28</sup> Given that the majority of data since the last Report Card now  
115 resides within the D grade boundary, the grade was reduced from a C- to a D.

#### 116 **Active Play: INC**

117 A lack of available data and appropriate definitional means for measuring this indicator was cited  
118 in the 2014 Report Card and an INC grade was assigned.<sup>7</sup> The same issues are still apparent and  
119 consequently, an INC grade was awarded again. Despite this, younger children are likely  
120 engaging in active play, particularly during school break times.<sup>29</sup> Yet, participation in physically  
121 active play declines with age as a function of biological maturity.<sup>30</sup> For example, recent data  
122 from the MCS show 80% of 5 year olds engage in active play with a parent at least once or twice  
123 a week, whereas 54% of 11 year olds do so.<sup>10</sup> Data are therefore also needed on the type and  
124 frequency of unstructured PA performed by adolescents, particularly because it may help to  
125 reduce health inequalities.<sup>16</sup>

#### 126 **Active Transportation: C-**

127 Data from the NTS and MCS informed this grade, and similar to the 2014 Report Card, 47%-  
128 51% of children actively commute to or from school, though only 2% of these children go by  
129 bicycle.<sup>11,13</sup> Approximately 55% of primary schools offered Bikeability cycle training in 2012,<sup>31</sup>  
130 though according to a recent evaluation of the scheme, there was no evidence of increased  
131 cycling frequency levels among children.<sup>32</sup> Additional measures may be needed, including  
132 changes to the built environment (e.g., segregated cycle lanes and traffic free routes), if we are to  
133 improve both bicycle safety and cycling levels across England.<sup>33,34</sup>



134 In terms of active transport to non-school destinations, general bike use is slightly better with  
135 28% of 11 year olds reporting the use of their bike several times a week,<sup>11</sup> and 47% of 2-16 year  
136 olds walk for 20 minutes or more, 3 or more times a week.<sup>19</sup> However, boys are more likely to  
137 travel on their own by bike (36% vs. 23%) and by foot (54% vs. 44%) than girls, according to the  
138 MCS,<sup>11</sup> which likely reflects the higher level of independent mobility typically given to boys.<sup>35</sup>  
139 Due to the lack of improvement on this indicator, the consistently low levels of bike use, and the  
140 lower proportion of girls making journeys on their own by active means, the panel decided to  
141 drop the C grade to a C-. However, it must be noted that some children may use other forms of  
142 active travel not considered here (e.g. scooters, roller blades, skate boards etc.) and some  
143 journeys may be made using both passive and active means. An internationally agreed definition  
144 and metric of active travel is necessary to facilitate comparisons across countries.

#### 145 **Sedentary Behaviours: INC**

146 An INC grade was assigned to this indicator for a second year, because there are currently no UK  
147 guidelines which specify a threshold for sedentary time that can be used as a benchmark.<sup>7</sup>  
148 Furthermore, there is a lack of available data on children's engagement in sedentary behaviours  
149 with the exception of recreational screen time, which shows that 62% of young people reported  
150 watching TV and screen-based media for > 2 hours per day.<sup>8</sup> However, past research has  
151 focussed heavily on TV viewing alone but children and young people have access to a wide  
152 range of screen-based entertainment,<sup>36</sup> thus future research is needed on the effects that this may  
153 have on children's health. Data on other non-screen based sedentary behaviours are also  
154 required, particularly since children who engage in high screen time may be more sedentary in  
155 general.<sup>37</sup> In order for a grade to be assigned in future Report Cards, and to advance this area of  
156 research, specific evidence-based guidelines for sedentary behaviours are needed in the UK.

**157 Family and Peers: INC**

158 For a second time, an INC grade was awarded to this indicator due to a lack of nationally  
159 representative data on family and peer support for PA in England.<sup>7</sup> Data from the YST shows  
160 that 53% of parents are engaged in their child's extra-curricular PA and sport at school, though  
161 only 8% of these parents are reported to be 'completely engaged' (2015 YST; unpublished  
162 custom analysis). However, it is unclear what is meant by 'engaged' in terms of the type of  
163 support provided by parents, thus these data were not used to inform a grade. Only one  
164 benchmark, which examined the proportion of children doing sport/PA as a family could be  
165 assigned a grade. This benchmark was given a D grade because 41% of young people do PA  
166 with their family at least once a week.<sup>8</sup>

**167 School: B+**

168 Five benchmarks were assessed, including a new benchmark on the proportion of schools who  
169 have a specialist teacher delivering curriculum Physical Education (PE). This new benchmark  
170 contributed to the decline in the overall school grade from an A- to a B+ overall.  
171 Data from the PE and Sport Survey<sup>38</sup> were used to inform the A- grade for school PE in the 2014  
172 Report Card.<sup>7</sup> This survey was discontinued from 2010, and PE is no longer monitored annually  
173 across all schools in England.<sup>39</sup> However, data have been collected recently by the YST, which  
174 was used to inform the grades for the majority of the school benchmarks. According to this  
175 survey, 77% of schools offer at least 2 hours of PE per week at Key Stage 1 (ages 5-7); this rises  
176 to 83% and 86% at Key Stages 2 (ages 7-11) and 3 (ages 11-14) respectively, but provision drops  
177 to 58% at Key Stage 4 (ages 14-16) (2015 YST; unpublished custom analysis). In addition, >  
178 97% of schools report offering extra-curricular PA and sport, and 85% of secondary and 97% of  
179 primary schools report encouraging PA as part of the school day.<sup>14</sup> As such, a B+ was assigned

180 for school PE, and an A grade was awarded to both the availability of additional opportunities  
181 and the promotion of daily PA benchmarks. As 57% of schools reported having a specialist PE  
182 teacher, with more secondary schools (86%) providing this than primary schools (44%) (2015  
183 YST; unpublished custom analysis), a B- was awarded to the provision of a PE specialist  
184 benchmark.

185 As for the provision of PA facilities at school, data from a report on spending the PE and Sport  
186 Premium (£150 million ring-fenced funding provided to all primary schools in England\*) was  
187 used.<sup>41</sup> This report shows that 46% of primary schools have access to outside courts, 64%-78%  
188 have access to a multi-purpose school hall, swimming pool and playing field, and 100% have  
189 access to a playground.<sup>41</sup> It is a statutory requirement for schools to provide outdoor space for  
190 PA, though this does not apply to pupil referral units (an establishment for those who are unable  
191 to attend mainstream school),<sup>42</sup> and according to a consultation by Sport England, approximately  
192 3000 primary schools do not have adequate outdoor space for PA and sport.<sup>43</sup> Furthermore, the  
193 benchmark specifies that facilities should be in 'good condition', but the only indication of the  
194 quality of such facilities is that 47% of schools thought the quality and 45% thought the range of  
195 their facilities had improved since the introduction of the PE and Sport Premium.<sup>41</sup> Further, 30%  
196 of young people say they would play more sport if their school had better facilities.<sup>27</sup> As such, it  
197 is possible that some school facilities may need improvement and little is known about provision  
198 across secondary schools. Taking this into account, the grade for this benchmark was reduced  
199 from an A to a B+.

## 200 **Community and the Built Environment: B**

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\*This funding will be doubled from April 2018 as part of the new sugar tax.<sup>40</sup>

201 The grade for this indicator has not changed and remains at a B.<sup>7</sup> Four benchmarks were used to  
202 measure this indicator, pertaining to access to and use of outdoor parks and spaces, satisfaction  
203 with such spaces and perceptions of safety within the local neighbourhood.

204 According to data from the MCS, 93.4% of 11 year olds have a playground available to them  
205 where they live, and 61.2% of 5 year olds are taken to a playground weekly.<sup>10</sup> Other data show  
206 that 70% of children visit the natural environment at least once a week.<sup>44</sup> Consequently, A and B  
207 grades were awarded for access to and use of outdoor parks and spaces respectively. In terms of  
208 satisfaction with these spaces, a C grade was assigned because 59% of park managers, and 50%  
209 of park visitors, feel that their parks are in good condition.<sup>45</sup>

210 It is promising that 72% of young people agreed that it is safe for children to play outdoors  
211 during the day where they live according to the HBSC,<sup>8</sup> and a higher proportion of parents  
212 (86.4%),<sup>46</sup> and 11 year olds (89%)<sup>11</sup> report that their home area is safe, according to the MCS. A  
213 B+ was awarded to this benchmark to place emphasis on the HBSC data, given that it is more  
214 relevant to PA in particular, and the + was included to reflect the higher percentage reported in  
215 the MCS. An area for consideration in future Report Cards is the perception of traffic safety and  
216 the proportion of children who are allowed to leave the house to play outdoors/actively travel to  
217 places unsupervised. This will provide a better indication of neighbourhood safety and whether  
218 the spaces near to home are adequately suited to PA behaviours.

#### 219 **Government Strategies and Investment: INC**

220 Akin to the 2014 Report Card, grading this indicator was difficult due to a lack of independent  
221 evaluation of different strategies and policies that are currently in place.<sup>7</sup> Thus, we do not know  
222 how successful such policies are in terms of promoting PA participation among children and  
223 youth. However, due to the lack of improvement across all grades in the 2016 Report Card, it

224 would seem unlikely that current policies and strategies are having a significant impact on a  
225 large scale.

### 226 **Strengths and Limitations**

227 The 2016 Report Card has a number of strengths. First, it is the only review of its kind available  
228 in England which includes an overall assessment of multiple PA behaviours and varying levels  
229 of influence among children and youth. Second, it is a useful resource which can be used by a  
230 number of people including public health practitioners, teachers, parents and others that have an  
231 influence on children's PA levels. It can also be used to influence future policy directions, serve  
232 as a tool for developing future research ideas, and guide research funding priorities.<sup>7</sup> Further, a  
233 number of experts in the field were involved in the grade assignment.

234 Despite these strengths, some limitations should be highlighted. For example, there is a lack of  
235 available data to measure some indicators which was also the case for England's 2014 Report  
236 Card.<sup>7</sup> Although the best available evidence was used to inform the grades, there is a need for  
237 continuous monitoring of children's PA participation using objective measures on a wide age  
238 range of participants (e.g., from 2-18 years). In addition, there are still no UK specific guidelines  
239 for sedentary behaviour. Such guidelines are needed if we are to grade this indicator in future,  
240 and a systematic surveillance tool that captures nationally representative data akin with all  
241 benchmarks is needed.

242

243

### **Conclusion**

244 In conclusion, the grades reflect that PA levels are low among children and youth across  
245 England. There has been no improvement since the last edition of the Report Card, with many  
246 grades having declined, and a lack of available data to measure some indicators. Despite this,

247 there is still sufficient provision of facilities and PA programmes for children and youth,  
248 reflected in the B+ and B grades awarded to the school and community indicators. Thus, further  
249 work is needed to understand how to promote the use of such facilities and programmes.

250

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253 Report Card, pertaining to the Sedentary Behaviour indicator.

254

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396 **Tables**

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398 Table 1. Grades According to Physical Activity Indicators assessed in England's 2016 Report Card on Physical Activity for Children  
399 and Youth

<b>Indicator</b>	<b>Benchmark(s)</b>	<b>Grades</b>
Overall Physical Activity Levels	% of children/youth achieving $\geq 60$ minutes of MVPA per day	D-
Organized Sport Participation	% of children/youth participating in organized sport/PA programmes out of school time	D
Active Play	% of children/youth engaging in daily unstructured/unorganized active play	INC
Active Transportation	% of children/youth who use active transport to get to and from places (school, park etc.)	C-
Sedentary Behaviours	% of children/youth meeting sedentary behaviour guidelines	INC
Family and Peers	% of parents who support their children's PA and sport opportunities (e.g., volunteering, paying membership fees, driving etc.)	INC
	% of parents who do sport/PA with their children	
	% of children/youth who have friends that support them to be physically active	

School	% of schools allocating at least 120 minutes of curriculum PE per week	B+
	% of schools with specialist PE teachers	
	% of schools that offer additional PA opportunities (excluding PE)	
	% of schools that promote PA as part of the school day	
	% of pupils who have access to PA facilities at school (e.g., sports hall, outdoor playground)	
Community and the Built Environment	% of children/youth with access to outdoor parks and spaces	B
	% of children/youth who use outdoor parks and spaces	
	% of children/youth who are satisfied with their local outdoor parks and spaces	
	% of children/parents who perceive their neighbourhood to be safe	
Government strategies and investment	Evidence of allocated funds and PA promotion strategies/initiatives for all children and youth	INC

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401 *Note.* The grade boundaries for each indicator are: *A* is 81% to 100%; *B* is 61% to 80%; *C* is 41% to 60%, *D* is 21% to 40%; *F* is 0%

402 to 20%; *INC* is Incomplete data.

403 MVPA, moderate-to-vigorous intensity physical activity; PA, physical activity; PE, physical education.

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406 **Figures**

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408 Figure 1: Front Cover of England's 2016 Physical Activity Report Card



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