

Wales' Future Generations Challenge the World for the "Sitting" Gold Medal

*It's Time to MOVE the
Bottom Line*



2018

Active Healthy Kids
WALES Report Card





Contents

Summary of Indicators and Grades	2
Active Healthy Kids-Wales Authors and Contributors	3
Expert Group Members	3
Acknowledgements	4
Funding	4
Access to the AHK-Wales Report Card	4
Referencing the AHK-Wales Report Card	4
Future Report Cards	4
Aims	5
Background and Context	5
Stages of Work	6
Methodology	8
Process used to assign grades	9
Results	9
Overall Physical Activity	10
Organised Sport Participation	13
Active Play	17
Active Transportation	21
Sedentary Behaviours	24
Physical Fitness	28
Physical Literacy	32
Family and Peers	36
School	39
Community and the Environment	42
Government	44
References	48



Summary of Indicators and Grades

Physical Activity and Health Behaviour Outcomes	
Overall Physical Activity 18.4% of children and young people aged 11-16 years met the recommendation of at least 60 minutes of MVPA every day of the week; 16.8% children and young people aged 11-16 usually exercise in their free time every day of the week ¹ . In another survey, 51% of 3-17 year olds were active for at least an hour seven days a week ² .	D+
Organised Sport Participation 55% of children and young people aged 11-16 years take part in organised activities outside of school/outside of lessons ¹ .	C+
Active Play 41% of children aged 5-17 years reported playing out most days ³ . In another survey, 44% of 11-16 year olds exercised in their free time during their summer holidays ¹ .	C-
Active Transportation 44% primary school children and 33% secondary school pupils travel actively to school (walk with an adult, walk on their own or with other children, cycle) ² . In another survey, 33.8% of children and young people aged 11-16 years walk/cycle to school; 36.1% children and young people walk/cycle from school ¹ .	D+
Sedentary Behaviours 80% of children/young people aged 11-16 years spend 2 or more hours sitting in their free time (e.g. watching TV, using a computer or mobile phone, travelling in a car or by bus, sitting and talking, eating and studying) on weekdays and 87% on the weekend ¹ . In another survey, 81% of children had at least two hours screen time (using electronic devices or watching television) on a weekday, and over 92% on a weekend day ¹ .	F
Physical Fitness No national data covering all components of physical fitness and full age range therefore inconclusive.	Inc.
Physical Literacy Physical Literacy sub-indicators: Physical competence - Dragon Challenge 2017 = D+ ⁴ ; Motivation - No Data = INC; Confidence - No Data = INC; Knowledge and understanding - No Data = INC. Overall Physical Literacy is therefore inconclusive ⁵ .	Inc.
Settings and Influences on Physical Activity and Health	
Family and Peers 59% of parents were active for 150 minutes+ a week, 8% of parents take part in vigorous activity for >75 minutes/ week, 31% of parents take their child to the playground and 20% of parents take part in informal games such as playing Frisbee ² .	D
School No updated data available for 'School' since AHK-Wales 2016, therefore School is inconclusive.	Inc.
Community and Environment No updated data available for 'Community and Environment' since AHK-Wales 2016 Report Card, therefore Community and Environment is inconclusive.	Inc.
Government 21 Policy documents assessed - Health; Sport; Education; Environment; Transport; Urban Design/ Planning; Other (Play, Sustainable Development; Cross-cutting) Used HEPA Policy Assessment Tool & created weighted Scoring Grid using criteria ⁶ . Based on present day activity not developing/ future plans = 54%.	C+



Active Healthy Kids-Wales Authors and Contributors

The Active Healthy Kids-Wales (AHK-Wales) 2018 report card was produced by an Expert Group that consisted of 24 academics, postgraduate researchers, professionals and practitioners. Academics and researchers across six Universities in Wales and England collaborated with professionals and practitioners working in Welsh Government, Public Health Wales, Sustrans, Play Wales, Sport Wales and the National Dance Company Wales to co-produce the AHK-Wales 2018 report card.

Expert Group Members

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Acknowledgements

The Expert Group would like to thank The Waterloo Foundation for funding project.

Funding

The AHK-Wales 2018 Report Card was developed through in-kind contributions from the Expert Group. Work was supported by a grant from The Waterloo Foundation.

The AHK-Wales Expert Group is seeking funding from partners and stakeholders to develop the Active Healthy Kids-Wales 2020 Report Card.

Access to the AHK-Wales Report Card

Available on the Active Healthy Kids Wales website:

www.activehealthykidswales.com

Referencing the AHK-Wales Report Card

Stratton G, Edwards L, Tyler R, Blain D, Bryant A, et al. (2018). Active Healthy Kids Wales 2018 Report Card.

This card can be reproduced freely

Future Report Cards

The Active Healthy Kids Wales 2018 Report Card is the third Active Healthy Kids Wales (AHK-Wales) report card following the inaugural and second report card published in 2014 and 2016 respectively^{7,8}.

The Active Healthy Kids Wales is part of the Active Healthy Kids Global Alliance 3.0 that will release report cards from 49 countries across 6 continents on 27th November 2018 in Adelaide, Australia.

The target date for the publication of the next Active Healthy Kids Wales Report Card is in 2020.



Aims

The Active Healthy Kids Wales 2018 Report Card aimed to:

1. Assess the 'State of the Nation' in relation to the levels of physical activity and sedentary behaviour.
2. Track trends in physical activity and sedentary behaviour.
3. Present an international context for physical activity and sedentary behaviour.
4. Inform policy, strategy, services and professional practice in physical activity and sedentary behaviour.
5. Identify critical gaps in knowledge related to children's physical activity and sedentary behaviour.
6. Provide evidence for advocates of physical activity and health related behaviours.

Background and Context

As the AHK-Wales Expert Group of academics, educators and allied professionals, we are concerned about the health of children in Wales. The AHK-Wales Expert Group aims to use data on physical activity to advocate for children's right to play, engage with sport and physical activity, learn and achieve, and be active and healthy. The Expert Group are motivated to promote healthy active behaviour and physical literacy in children. Our mission is to produce AHK-Wales Report Cards that provide a clear evidence base on 11 quality indicators related to physical activity that should be used to advocate and influence local, regional and national policies and investments in physical activity for children and young people.

In support of the aims of AHK-Wales, our rationale is that Wales has the highest prevalence of overweight children in the UK, whilst levels of sedentary behaviour, and physical activity and fitness are amongst the worst globally⁹. Conversely, Wales is a policy pioneer in children's play¹⁰, it has an Active Travel Act (2013)¹¹ and Well-being of Future Generations Act (2015)¹² on its government statute and prioritises physical literacy as a key part of a child's development¹³.

The AHK-Wales 2018 report card summarises the country's progress and position on children's health related physical activity. The AHK-Wales is part of the AHK Global Alliance 3.0 that will release report cards from 49 countries across 6 continents on 27th November in Adelaide, Australia.



Stages of Work

This is the third Active Healthy Kids Wales (AHK-Wales) report card following the inaugural and second report card published in 2014 and 2016 respectively^{7,8}. Swansea University coordinated the work, supported by a national network of academics and professionals from sport, play, transport, public health, sport and exercise science, and education sectors. These constituents formed the Expert Group.

The Expert Group consisted of 24 academics and professionals from universities and the public sector in Wales. Professionals were invited to become part of the AHK-Wales Expert Group via e-mail in December 2017. The Expert Group consisted of researchers across five Universities in Wales and one university in England, professionals working in the Welsh Government, Public Health Wales, Sustrans, Play Wales, Sport Wales and practitioners to co-produce the AHK-Wales 2018 report card.

Depending on their expertise, eleven team leaders were assigned to specific indicators: Overall Physical Activity (DB); Organised Sports Participation (RT); Active Play (MM); Active Transport (NC); Sedentary Behaviours (KM); Physical Fitness (SW & KT); Family and Peers (LE); School (AB); Community and Environment (MCM); Government (MW); Physical Literacy (NW & LE).

The group met once a month for four months, with meetings lasting about two hours. Over the four meetings, AHK-Wales team leaders presented findings for the 11 indicators for the whole group. Discussions followed each presentation and consensus was decided on each grade. The Expert Group was co-ordinated by two project leaders and one postgraduate researcher. The co-project leader secured funding for the project and outlined the programme of work (GS). The other co-project leader (LE) and the research lead (RT) were responsible for arranging meetings, sourcing data, contacting team leaders and producing Report Card materials.

Eleven indicators were assessed in total; an additional indicator (physical fitness) to the 10 included in the AHK Wales 2016 Report Card. Physical fitness was added to be consistent with other countries.

AHK-Wales 2018 Expert Group meeting outcomes are summarised in Figure 1.





Meeting 1: 31st January 2018

- 1.1 Appointed P/T Researcher - Richard Tyler
- 1.2 Reviewed the AHK-Wales 2018 methodology
- 1.3 Sourced available data to undertake the analysis
- 1.4 Debate on indicators 'obesity', 'physical fitness' and 'physical literacy'
- 1.5 Allocated quality indicator roles to each member and indicator leaders
- 1.6 Timelines set for groups to report back on each indicator
- 1.7 Future meeting dates shared and acknowledged funders (The Waterloo Foundation)

Meeting 2: 28th February 2018

- 2.1 Interim grade presented for 'Government' (MW)
- 2.2 Interim grade presented for 'Physical Fitness' (RT)
- 2.3 Interim grade presented for 'Overall Physical Activity' (DB)
- 2.4 Interim grade presented for 'Organised Sport Participation' (RT)
- 2.5 Organised the indicators that will be presented in next meeting on March 28th
- 2.6 Consulted with 'Geoshepherds' - website domain <http://activehealthykidswales.com/>

Meeting 3: 28th March 2018

- 3.1 Complete grade presented for 'School' (AB)
- 3.2 Complete grade presented for 'Physical Literacy' (LE & NW)
- 3.3 Complete grade presented for 'Community and Environment' (MM & MCM)
- 3.4 Interim grade presented for 'Active Transport' (NC)
- 3.5 Interim grade presented for 'Sedentary Behaviour' (RT in lieu of KM)
- 3.6 Organised the indicators that will be presented in next meeting on April 25th

Meeting 4: 25th April 2018

- 4.1 Complete grade presented for 'Government' (MW)
- 4.2 Complete grade presented for 'Active Play' (MM)
- 4.3 Complete grade presented for 'Family & Peers' (LE)
- 4.4 Complete grade presented for 'Active Transport' (LE in lieu of NC)
- 4.5 Complete grade presented for 'Overall Physical Activity' (DB)
- 4.6 Complete grade presented for 'Sedentary Behaviours' (KM)
- 4.7 Complete grade presented for 'Organised Sport Participation' (RT)
- 4.8 Complete grade presented for 'Physical Fitness' (RT & SW)
- 4.9 Complete grade presented for 'Community & Environment' (MCM)
- 4.10 Overall report card complete

Meeting 5: 30th May 2018

- 5.1 Deciding on an AHK-Wales 2018 theme
- 5.2 Media messages discussed and decided
- 5.3 Formation of a 'Active Healthy Kids Wales' Group meeting 2-3 times per year

Figure 1. AHK-Wales 2018 Expert Group Meetings Outcomes.





Methodology

The AHK-Wales 2018 Expert Group analysed results to assign grades using the “best possible evidence” from nationally representative data, for example, the National Survey for Wales² and Health Behaviour in School-Aged Children¹. This approach is congruent with the National Institute of Health and Care Excellence (NICE) methodology¹⁴ and past AHK-Wales report cards^{7,8}.

Following the AHK Global Alliance grading system¹⁵, the Expert Group assigned an individual grade to each of the 11 indicators. The grading system used was developed by the Canadian group and is adopted by all countries participating in the AHK Global Alliance. The grades range from A+ where 94-100% of children are meeting the criteria, to F where 0-19 % meet the recommended threshold. Inconclusive (INC) indicated that data were inadequate or not available (see Table 1).

Table 1. Active Healthy Kids Global Alliance grading system.

Grade	Descriptor	Prevalence
A+		94 - 100 %
A	Wales is succeeding with most children and adolescents	87 - 93 %
A-		80 - 86 %
B+		74 - 79 %
B	Wales is succeeding with well over half of children and adolescents	67 - 73 %
B-		60 - 66 %
C+		54 - 59 %
C	Wales is succeeding with about half of children and adolescents	47 - 53 %
C-		40 - 46 %
D+		34 - 39 %
D	Wales is succeeding with under half of children and adolescents	27 - 33 %
D-		20 - 26 %
F		< 20 %
Inc.	Incomplete grade - data not sufficient or adequate	N/A

This report is based upon the best available evidence and recognised that most of the available data in Wales were susceptible to bias (i.e. self-reported data as oppose to objective methods). However, this bias is evident around the globe as self-reported data is cost-effective and accessible to larger populations. Further, the AHK-Wales 2018 Expert Group have included recommendations on the evidence required for future AHK-Wales Report Cards.



Process used to assign grades

The process that was used to assign the grades for the health indicators consisted of:

1. The best available evidence for each quality indicator. This resulted in the use of quantitative survey data for 10 indicators, namely the Health Behaviour in School-Aged Children survey (2017/18)¹, National Survey for Wales (2016/17)², Play Sufficiency Assessment Surveys³. The Health-Enhancing Physical Activity (HEPA) Policy Audit Tool was utilised to grade Government indicator⁶.
2. During meetings a rationale for using each survey data were discussed. In the first instance, surveys that were representative of children in Wales were selected. Where nationally representative data were not available, the best available survey data were used. In all cases surveys included a significant sample that enabled the Expert Group to assign a grade to a quality indicator.
3. For each quality indicator, data were considered against a recommendation or benchmark. For example, the recommended benchmark for the 'Overall Physical Activity Levels' indicator is that children should engage in 60 minutes of moderate to vigorous physical activity (MVPA) per day. These benchmarks were aligned with the AHK Global guidelines.
4. The rationale for using the data source was given and likely biases in the data recorded.
5. Subsequently major gaps in the data were noted and considerations given to limitations in the "best available evidence".
6. Finally, recommendations on how to improve the grade or improve measurement were provided.
7. Quality assurance and agreement on grades were achieved through a verification process. This process involved two members of the group agreeing on grade assignment for each quality indicator. During meetings, two members presented the grade to the Expert Group with discussions centred on survey methodology and data quality. Grades were then either confirmed or further evidence on methodology or information on data quality was sought for presentation at the subsequent meeting.

Results

The following sections provide an outline of each quality indicator and the criteria used to assign a grade including; recommendations or benchmark, data sources used to assign grades including trends, biases and gaps, and finally some suggestions on how to improve the grade in the future.

Overall Physical Activity

D+



Background:

The Research Working Group used the following benchmark to allocate the grade for the physical activity indicator: The percentage of children and young people who meet the recommended physical activity guidelines.

Physical Activity Guidelines: The UK-wide Chief Medical Officers' guidelines for physical activity recommend that to receive the health benefits from physical activity:

Children under 5 years old (Early Years) - Children who are capable of walking unaided should be physically active daily for at least 180 minutes (3 hours), spread throughout the day. For children who cannot yet walk unaided, physical activity should be encouraged from birth, especially through floor-based play and water-based activities in safe environments.

Children and young people (5-18 years old) - All children and young people should engage in moderate to vigorous intensity physical activity (MVPA) for at least 60 minutes and up to several hours every day. Participation in vigorous intensity activities should be incorporated at least three days a week; these include any activities that strengthen muscles and bones.

(<http://www.bhfactive.org.uk/userfiles/Documents/startactivestayactive.pdf>)

Current survey data:

1. The National Survey for Wales (NSW, 2016-17) asked parents/guardians of children aged 3-17 to report the amount of time their child was active on each day in the previous seven days. Parents were informed that they should consider activities that left their child feeling warm or at least slightly out of breath and that these activities could include playing sport, cycling, running or brisk walking either at school, outside school, with a club, with friends or on their own. Results of the survey demonstrated that **51% of children were active for at least an hour seven days a week**. A higher proportion of boys were active for at least 1 hour a day in comparison to girls (55% B, 47% G). Due to the differences in method used to



gather data, results are not comparable to previous surveys (i.e., Welsh Health Survey, 2014).

2. The HBSC/SHRN (2017) asked young people aged 11-16 how many days they were physically active for a total of at least 60 minutes per day. The survey found that **18.4% of young people reported being physically active for at least an hour on seven days per week**. More boys than girls reported being active (23% B, 14% G). A decline in the proportion of young people reporting being active is observed from 11 years of age to 16 years of age (25.7%-11 years, 22.7%-12 years, 18.4%-13 years, 15.1%-14 years, 12.4%-15 years 12.2%-16 years). The proportion of White and Black Minority Ethnic children reporting being active was similar (18.3% W, 19.1% BME). These findings are similar to previous results from the same survey. In 2015 17.8% of young people reported being active for a total of at least 60 minutes per day, whereas in 2014 this figure was 15% and in 2010 19% were active.

Deciding on a Grade:

The Research Working Group assigned a D+ to the physical activity category to reflect the findings from both surveys. The percentage of active young people was between 18% and 51%. By taking the average of both surveys (34%), based on the new grading scheme proposed by the Active Healthy Kids Global Alliance, this represented a D+ score. This grade has increased from the D- grade awarded in 2016, however this is largely reflective of the change in grading criteria set by the Active Healthy Kids Global Alliance. Additionally, changes to the way data was gathered in the new National Survey for Wales in relation to the previous Welsh Health Survey make comparisons, or analysis of trends between data difficult. HBSC/SHRN data is comparable to previous years and analysis of trends reveals limited change in PA levels of children aged 11-16 since the previous surveys in 2015 (17.8% active), 2014 (15% active) and 2010 (19% active).

Considerations/Thoughts for the future:

- Both NSW and HBSC use self-reported measures of physical activity to obtain data.
- There continues to be no large scale studies measuring the physical activity behaviours of young people objectively. This is particularly important given the evidence of over-reporting of physical activity levels observed via self-report when compared to accelerometer measured physical activity (Health Survey of England, 2008).
- There is limited data available for the physical activity levels of children of all ages, particularly during the early years (children under 5).
- The impact of intervention programmes aiming to increase physical activity need to be quantified.
- The best available evidence indicates that the majority of young people in Wales need to increase their physical activity levels. This can be achieved through a range of behaviours including dance, sport, active transportation and active play.



Data Sources for the Overall Physical Activity Grade

Physical activity guidelines for children and young people:

<https://www.nhs.uk/live-well/exercise/physical-activity-guidelines-children-and-young-people/>

Get Active Your Way:

<http://www.nhs.uk/Livewell/fitness/Pages/Activelifestyle.aspx>

60 Active Minutes: <http://change4lifewales.org.uk/families/active/?lang=en>

Wales Coast Path: <http://www.walescoastpath.gov.uk/default.aspx?lang=en>

Sport Wales: <http://sportwales.org.uk/>

Physical Literacy - <http://physicalliteracy.sportwales.org.uk/en/>

5x60 - <http://sport.wales/community-sport/education/5x60.aspx>

Dragon Multi Skills & Sport - <http://sport.wales/community-sport/education/dragon-multi-skills--sport.aspx>

Sustrans Wales: <http://www.sustrans.org.uk/wales>

British Heart Foundation: <https://www.bhf.org.uk/heart-health/children-and-young-people>

Welsh Government - Physical Activity and Health infographics:

<https://gov.wales/topics/health/improvement/physical/?lang=en>

Active Families: <https://www.heartfoundation.org.au/active-living/active-families>



Organised Sport Participation

C+



There are currently no specific recommendations for the amount sport and dance that children and young people should participate in. However, organised sport participation is one way to potentially increase overall physical activity levels in children and young people in Wales.

In the Active Healthy Kids Wales 2016 Report Card, the percentage of children 'hooked on sport' (in line with Sport Wales' Vision of 'Every Child Hooked on Sport for Life') was used by the Research Work Group as the benchmark for grading this indicator. However, due to changes from a 2-year cycle to a 3-year cycle in the administration of the Sport Wales' School Sport Survey, up to date data on children and young people 'hooked on sport' was not available.

The Research Work Group therefore decided to use the Active Health Kids Global Alliance benchmark to allow for the best available data to be included in the grading of this indicator.

Active Health Kids Global Alliance Benchmark:

The percentage of children and youth who participate in organised sport and/or physical activity programs.

Current survey data:

A nationally representative data source was used by the Research Work Group to assign an organised sport participation grade.

- 1) The School Health Research Network: Student Health and Wellbeing Survey (2017) collected self-report data on 112,054 children and young people aged 11-17 years old. Distributed to 193 schools in Wales, children and young people were asked to report organised activities they took part in, in their free time outside of school. Possible responses to this question were as follows:
 - a) Organised team sport activities (e.g. football, basketball and volleyball)



- b) Organised individual sport activities (e.g. tennis, gymnastics and karate)
- c) Attending drama, arts or music groups (e.g. orchestra, choir, dance, theatre, playing a musical instrument)
- d) Attending a club (e.g. chess club, debate club, science club)
- e) Children and youth organisations (e.g. scouting, guides, cadets, Duke of Edinburgh)
- f) Attending faith-based activities (religious services, classes and religious youth groups)
- g) Volunteering for a club or organisation

The Research Work Group decided that responses, a) Organised team sport activities (e.g. football, basketball and volleyball), b) Organised individual sport activities (e.g. tennis, gymnastics and karate) and e) Children and youth organisations (e.g. scouting, guides, cadets, Duke of Edinburgh) should be considered for grading this indicator. The justification for the inclusion of 'children and youth organisations' was that these organisations promote physical activity through outdoor physical activities and adventures. *(The research work group considered using response c) to include dance, but due to dance being pooled with other art forms this response was excluded)*

The survey showed that **55% of children and young people reported attending at least one of these outside school organised activities**. There was a difference in the proportion of boys and girls attending at least one of these outside school organised activities (60% boys and 51% girls). There was also a difference in the proportion of children and young people across ethnicities; 56% among white populations and 47% among black and minority ethnic (BME) populations, reported attending at least one of these outside school organised activities.

Deciding on a Grade: The Research Working Group assigned a C+ to this indicator as, when taking participation outside of school in organised team sport activities, organised individual sport activities, and children and youth organisations, the proportion of children and young people was between 54 and 59%. **It is important to note that different questions and surveys were used for the grading of the 2018 Organised Sport Participation indicator compared to the 2014 and 2016 report cards.**

Considerations/Thoughts for the future:

- It is important to take into consideration that different questions and surveys were used for the grading of the 2018 Organised Sport Participation indicator compared to previous report cards. Therefore, the increase in grade from a C in the 2016 Report Card, to the current C+, should be viewed with caution as it is not an increase in



sport participation, but rather the change in the data available and the benchmark used for grading. That being said, the grade is still within the C category, meaning that an increase in participation in sport, dance and organised physical activities/adventures should maintain a priority in Wales. In addition, efforts should be made to address the inequalities that exist between boys and girls and across ethnicities.

- The School Health Research Network: Student Health and Wellbeing Survey used self-report methods to obtain data on organised activities. Although the survey reports on the different types of organised activities that children and young people take part in, the survey does not report the frequency of participation (i.e. how many times a week do they take part in sport).
- Current surveys regarding participation in sport/dance/physical activity promoting clubs in Wales do not capture the duration of the sessions that children and young people take part in.
- There is a lack of evidence on children of early years (under 5 years old). This needs to be addressed through systematic robust data collection methods. Further for the 2018 report card there is no up to date data available for children under 11 years of age.
- The 2018 School Sport Survey and the Further Education Sport Survey are currently being administered across Wales. Although the data is not available for this report card, this data will be used in the 2020 AHK-Wales report card and will allow the analysis of trends in the children and young people 'hooked on sport'.
- The best available evidence shows that just over a half of children and young people in Wales take part in either organised sports (individual or team), or children and youth organisations that provides opportunities to participate in physical activities/adventures.



Data Sources for the Organised Sport Participation Grade

Sport Wales: <http://sportwales.org.uk/>

- 'In Your Area' Club Finder - <http://sport.wales/mysportwales/in-your-area/in-your-area.aspx>
- Community Sport - <http://ourambitiousjourney.sport.wales/>
- 5x60 - <http://sport.wales/community-sport/education/5x60.aspx>
- Dragon Multi Skills & Sport - <http://sport.wales/community-sport/education/dragon-multi-skills--sport.aspx>

Disability Sport Wales: <http://disabilitysportwales.com/>

- Clubs - <http://www.disabilitysportwales.com/clubs/>
- Cerebral Palsy Sport: <http://www.cpsport.org/>
- Welsh Athletics: <http://www.welshathletics.org/clubs/club-list.aspx>
- National Dance Company Wales: <http://www.ndcwales.co.uk/en>
- Scouts Wales/Cymru: <http://www.scoutscymru.org.uk/>
- Girl Guiding Wales/Cymru: <http://www.girlguidingcymru.org.uk/en-gb/>
- Wales - Duke of Edinburgh's Award: <https://www.dofe.org/notice-boards/wales/>



Active Play

C-



Background:

Active play may involve symbolic activity or games with or without clearly defined rules; the activity may be unstructured/unorganised, social or solitary, but the distinguishing features are a playful context, combined with activity that is significantly above resting metabolic rate. Active play tends to occur sporadically, with frequent rest periods, which makes it difficult to record. The activity is self-determined and not adult-led or organised.

Children have a right to play, as recognised in article 31 of the United Nations Convention on the Rights of the Child (UNCRC). The Convention defines play as initiated, controlled and structured by children, as non-compulsory, driven by intrinsic motivation. It has key characteristics of fun, uncertainty, challenge, flexibility and non-productivity. In Wales, a policy framework for play has been in place since 2002 with the publication of a national play policy, followed by a national strategy in 2006. The Welsh Government recognises that to achieve its aim of creating a play friendly Wales and to provide opportunities for our children to play it is necessary for local authorities, their partners and other stakeholders to also work towards this purpose. Therefore, a section on Play Opportunities (play sufficiency duties) was included in the Children and Families (Wales) Measure 2010.

Children report that playing is one of the most important aspects of their lives; they value the time, the freedom and quality places to play. Consultations with children and young people in Wales show that they prefer to play outdoors away from adult supervision, in safe but stimulating places.

Outdoor play is one of the ten evidence-based steps to help children in the early years to maintain a healthy weight promoted in the Public Health Wales *Every Child Wales* programme Step six focuses on outdoor play, with the ambition that every child will be given the chance to play outdoors every day. In a survey to inform the programme, almost all parents (97 per cent) of children under the age of five think it is important for their child to play outdoors every day. However, nearly a third of children under-five (29 per cent) are not getting the time outdoors that they need.



The benchmark used by the Research Work Group to allocate a grade to this indicator was:

- % of children and youth who engage in unstructured/unorganized active play for several hours a day
- % of children and youth report being outdoors for several hours a day
- % of children and youth using 'streets near home or school, park, playground not at school, playing fields not at school, and beach/sea for places of physical activity/play

Current survey data:

The best available main data sources considered for the indicator were:

1) Play Sufficiency Assessment Surveys

To comply with Play Sufficiency duties, each local authority in Wales has submitted Play Sufficiency Assessments to Welsh Government Ministers. Local authorities undertook surveys with children and many have used similar questions based on a template questionnaire. In 2016, 13 of 22 local authorities in Wales asked a total of 5,478 children aged 5-17 questions around play.

With regards to the use of outdoor spaces for places of physical activity/play, 13109 out of 21060 favourite choices were outdoor spaces. Regarding the benchmark of percentage of children and youth report being outdoors for several hours a day, 41 % report playing out most days. This data was used as it was the best available data seeking children's views about their access to enough time and spaces for playing outdoors. The Research Group agreed that, when outside, children tend to be physically active and stretch themselves both physically and emotionally than they would if they were supervised.

2) The Health Behaviour of School-aged Children (HBSC)/School Health Research Network (SHRN) Survey 2017

The HBSC/SHRN is a school-based survey with data collected through self-completion questionnaires administered in the classroom. The survey was carried out on a nationally representative sample and was completed by over 100,000 children and young people aged 11-16 years in Wales. The survey contains a core set of questions looking at the following:

- Background factors:** demographics, maturation and social background;
- Individual and social resources:** body image, family support, peers, school environment;
- Health behaviours:** physical activity, eating and dieting, smoking, alcohol use, cannabis use, sexual behaviour, violence and bullying, injuries;
- Health outcomes:** symptoms, life satisfaction, self-reported health and height & weight from which the body mass index is derived.



In relation to the Active Play indicator, the HBSC/SHRN 2017 asked: “During the most recent summer holidays, how often did you exercise in your free time so much that you got out of breath or sweated?”. A total of 44% (44,629 children) reported that they exercised ‘often’ or ‘all of the time’ during the summer holidays. Results reported a difference between sexes, with 50% of boys ($n = 25,287$) compared to 38% of girls ($n = 19,342$) reported that they exercised ‘often’ or ‘all of the time’ during the summer holidays.

The HBSC/SHRN 2017 is representative across all regions in Wales. However, the survey focuses solely on secondary aged children (aged 11-16 years) which is a likely bias in the results.

Deciding on a Grade:

The Research Working Group notes that collecting data from children in unstructured play in ethically and logistically challenging. The Group agreed that the variety of places for play should be considered. Data on the percentage of children reporting playing outdoors on most days (41%), as well as the percentage reporting exercise when not in school (44%) was synthesized to give an overall reporting average as 43% (42.5%), equating to a C- grade for the available data. The grade in AHK 2016 report card was C, due to the availability of more comprehensive data from children.

Considerations/Thoughts for the future:

The best available evidence shows that in terms of Active Play, Wales are only succeeding with below half of children and young people. Research suggests that given the opportunity, children get wide-ranging exercise as well as significant mental health benefits from freely chosen play. All children and young people need to play. Play is fundamental to the healthy development and well-being of individuals and communities, therefore encouragement towards getting children outdoors playing is a necessity. Children and parents report a range of barriers preventing children playing out including safety fears, traffic, time pressures, reduction in spaces to play.

Recommendations:

- The approach to data collection via Play Sufficiency Assessments needs to improve in order that a more coherent picture of children’s views.
- The National Survey for Wales should include gather information from parents regarding their children’s access to time and space for play
- Children’s ability to play outdoors locally ought to be promoted and the prioritisation of local community based interventions is necessary to address barriers to playing:
 - **Safer roads**



The adoption of a 20 mph speed limit in all residential areas will have wide-reaching and positive effect. Local Authorities should engage with local communities and facilitate resident led street led play projects across Wales.

- ***Making the most of community assets-school grounds for play***

Schools, as a central resource for the local community, should be encouraged to consider the options to make their school grounds available for free play after school and at weekends.

- ***School play time***

Schools should consider the value to pupil well-being when making decisions on the planning and length of the school day including play times, lunch times and homework scheduling.

Data Sources for the Active Play Grade

Play Wales: <http://www.playwales.org.uk/eng/>

Use of school grounds out of teaching hours toolkit:
<http://www.playwales.org.uk/eng/schoolstoolkit>

Support for street play: <http://playingout.net/>

Increasing physical activity in early years and child care settings:
<http://www.playwales.org.uk/login/uploaded/documents/INFORMATION%20SHEETS/Promoting%20physical%20activity%20through%20outdoor%20play%20in%20early%20years%20settings.pdf>

Every Child Wales programme: <http://everychildwales.co.uk>



Active Transportation

D+



Background:

Active transportation refers to any form of human-powered transportation - walking, cycling, using a wheelchair, in-line skating or skateboarding.

There are currently no recommendations for active transportation, although children and young people should be encouraged to take active forms of transport whenever possible. Research has shown that active transportation, especially travel to and from school, contributes a substantial portion to children and young people's overall physical activity level and is linked with higher levels of energy expenditure. The guidelines for physical activity levels for children and young people can be found under the 'overall physical activity level' indicator.

The Global Matrix Benchmark for this indicator relates to the percentage of children and youth who use active transportation to get to and from places (e.g., school, park, shops, friend's house). For the 2018 Report Card, the Research Work Group used the proportion of children and young people who use active transportation to get to school, as the benchmark for grading the Active Transportation indicator.

Current survey data:

Only 2 nationally representative data sources were considered by the Research Work Group to assign an active transportation grade.



1) The National Survey for Wales (2016/17)

The National Survey for Wales conducts a 25-minute face-to-face interview with one adult (aged 16+) in each household across Wales. 10,493 interviews with parents of primary & secondary school children were recorded. The data revealed that 44% of primary school children and 34% of secondary school pupils travel actively to school (walk with an adult, walk on their own or with other children, plus a few that cycle).

2) The Health Behaviour of School-aged Children (HBSC)/School Health Research Network (SHRN) Survey 2017

The HBSC/SHRN is a school-based survey with data collected through self-completion questionnaires administered in the classroom. The survey was carried out on a nationally representative sample and was completed by over 100,000 children and young people aged 11-16 years in Wales. The HBSC/SHRN data reported that 33.79% (34,637 children and young people aged 11-16) walk/cycle TO school and 36.09% walk/cycle FROM school (10,257 children and young people aged 11-16).

Other surveys considered previously for AHK 2016, were either no longer current (i.e. pre-2016) or deemed not to be nationally representative (for example, Sustran's Hands Up survey).

Observations of the best available data for the Active Transport indicator would suggest that there is a downward trend in the percentage of children are travelling actively to school.

Deciding on a Grade:

The Research Group decided to weight the data in the following way:

National Survey of Wales primary school data = 50%

National Survey of Wales secondary school, and HBSC travelling TO and FROM school data = 50%

The justification for this being that if we were to weight all four figures equally, secondary school children would be double-represented and so an average of the three secondary school data would account for 50% and the primary school data account for the other 50%.

After calculating the above, Active Transport came to 39% (D+). The grade in AHK 2016 report card was C. This difference may be due to the variance in the data sources available and the changes to the scoring system for the 2018 gradings.



Considerations/Thoughts for the future:

- The best available evidence shows that less than 40% of children and young people are travelling actively to school.
- All data for Active Transportation was collected through self-report methods, although, a major strength is that both surveys provided national data.
- There are fewer data sets available to measure this indicator than in previous years.
- As with previous years, surveys only provide data on travel to/from school and not other destinations (e.g. park, shops). More research is needed on how children and young people travel to other places including shops, parks and friends' or relatives' houses. These journeys may provide additional opportunities for active transportation and therefore should be considered for future national surveys.
- Public Health Wales will conduct an online survey open to all schools in Wales that will collect data on how children normally/usually travel to and from school. This data will hopefully be available for AHK 2020. The process will be underpinned by work to validate the methodology and question format, which is currently underway.

Data Sources for the Active Transport Grade

Active Journeys - Sustrans Schools active travel programme:

<https://www.sustrans.org.uk/wales/aboutactivejourneys>

Living Streets - walking initiatives: <https://www.livingstreets.org.uk/who-we-are/wales>

Welsh Cycling - cycling initiatives: <https://www.britishcycling.org.uk/wales>

Walk4Life: <https://www.walk4life.info/about-walk4life/schools>

Sedentary Behaviours

F



Sedentary behaviour is related to poorer health outcomes, such as type II diabetes, cardio-metabolic disease and all-cause mortality, regardless of an individual's physical activity levels. In simple terms this means that the longer the amount of time a person sits, the shorter they live. Children and young people spend a large amount of their day engaging in sedentary pursuits; sitting down whilst at school (e.g. during lessons or break time etc.), non-active travel (e.g. bus or car etc.), sitting during leisure time (e.g. watching television or playing video games etc.). Earlier studies have shown a reduction in physical and psychosocial health outcomes amongst children and youth who spend less than 2 hours engaging in sedentary behaviours.

The British Heart Foundation have summarised international recommendations from the USA, Australia and the United Kingdom. The recommendation for the amount of time children and young people should spend sitting during leisure time should be less than 2 hours per day.

http://www.bhfactive.org.uk/files/525/sedentary_evidence_briefing.pdf

Further, Australian guidelines suggest that infants, toddlers and pre-school children should not be sedentary, restrained, or kept inactive for more than one hour per day apart from when sleeping.

<http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines#npa05>

The benchmark used by the Research Work Group to allocate a grade to this indicator was '*the percentage of young people who exceed the recommended sedentary time guidelines (i.e. 2 or more hours)*'. Data on sedentary behaviours such as time spent sitting on weekdays and weekends outside of school hours were used.



Current survey data:

A nationally representative data source was used by the Research Work Group to assign a sedentary behaviours grade.

- 2) The School Health Research Network: Student Health and Wellbeing Survey (2017) collated self-report sedentary data on 112,054 children aged 11-17 years old. Distributed to 193 schools in Wales, young people were asked how much time spent sitting they had undertaken outside of school hours. The young people were asked to provide an answer for weekdays as well as weekends.

The survey showed that **81% of young people spent two or more hours sitting during the weekdays**. The proportions reported between boys and girls were different (82% boys and 80% girls). When comparing reports across age groups, higher proportions were observed among older age groups (aged 14 years and above,) with 88% reporting 2 hours or more sitting time on weekdays compared to younger peers (75%). A difference in the proportion of young people not meeting the guidelines was also observed across reported ethnicities (78% among black and minority ethnic (BME) populations and 81% among white populations).

Compared to weekdays, the survey showed even higher proportions of sedentary time on weekends, with **88% of young people reporting two or more hours of sitting time**. No gender difference was noted in the reported proportions (88% for both genders). Similar to weekday data, higher proportions of young people not meeting the recommended sedentary guidelines were observed among those aged 14 years and above (92% vs. 84%). Ethnicity data showed a difference in proportions; with 88% of the white population and 86% of the BME population reporting two or more hours of sitting time.

- 3) The National Survey for Wales (NSW, 2016-17) asked parents/guardians of children aged 3-17 to report the amount of time their child was active on each day in the previous seven days. Parents were informed that they should consider activities that left their child feeling warm or at least slightly out of breath and that these activities could include playing sport, cycling, running or brisk walking either at school, outside school, with a club, with friends or on their own. Results of the survey demonstrated that **81% of children** had at least two hours screen time (using electronic devices or watching television) on an average weekday and over 92% had at least two hours screen time on a weekend day. Screen time among children increased with age.

Deciding on a Grade:

The Research Working Group assigned an F to this category as when taking both weekday and weekend data into account, the proportion of non-sedentary young people was only between 12 and 19%. This grade has changed from the 2016 AHK-Wales report card that concluded a D- grade. It is important to note that the questions used for the 2016 and 2018 sedentary indicator differ, with the 2018



question capturing all sedentary behaviours with a single question (i.e. all sitting related activities).

Considerations/Thoughts for the future:

- The School Health Research Network: Student Health and Wellbeing Survey used self-report methods to obtain data on sedentary behavior. Validation studies have reported an overestimation of activity when using surveys to gather physical activity measures amongst young people.
- There are no large-scale studies in which sedentary behavior has been measured objectively, for example, with the use of accelerometers, in the United Kingdom.
- There is limited research available for children under age 11 years. This need to be addressed through systematic robust data collection methods.
- The effect of interventions to reduce time spent sitting needs to be quantified.
- The best available evidence shows that majority of children and young people in Wales need to decrease their levels of sedentary behaviours.
- A significant effort needs to be made to address the very high levels of sedentary behavior among young people in Wales. In order to inform the design of effective strategies, there is a need to first generate high-quality evidence using objective measures while simultaneously capturing information on the domain (e.g. school time, leisure time etc.), type (e.g. sitting using the phone) and context of sedentary behaviours.

Data Sources for the Sedentary Behaviours Grade

Department of Health:

<http://www.health.gov.au/internet/main/publishing.nsf/content/sbehaviour>

Participation Canada:

https://www.participation.com/sites/default/files/downloads/Participation-LifestyleTips-ReducingKidsSedentaryTime_0.pdf.

British Heart Foundation:

<https://www.bhf.org.uk/heart-matters-magazine/activity/sitting-down/5-tips-for-reducing-sedentary-behaviour>

<https://www.heartfoundation.org.au/active-living/sit-less>

Institute of Agriculture and Natural Resources:



<https://food.unl.edu/sitting-new-smoking-22-tips-sitting-less-and-moving-more>

Alliance for a healthier generation:

https://www.healthiergeneration.org/live_healthier/get_moving/decrease_screen_time/

Health Powered Kids:

<https://www.healthpoweredkids.org/lessons/decreasing-screen-time/>

National Institute for Health:

<https://www.nhlbi.nih.gov/health/educational/wecan/reduce-screen-time/tips-to-reduce-screen-time.htm>

Very well family:

<https://www.verywellfamily.com/strategies-limit-your-teens-screen-time-2608915>

What works for health:

<http://whatworksforhealth.wisc.edu/program.php?t1=21&t2=12&t3=78&id=607>

Playful notes:

<https://playfulnotes.com/how-to-reduce-screen-time/>



Physical Fitness

Inc



Background:

Although there is no universally agreed definition of physical fitness, experts in the field of physical activity and health have previously suggested an operational model that describes two goals of physical activity - health and performance (Bouchard and Shephard, 1993). Consequently, two categories of physical fitness were defined; health-related fitness and performance-related fitness.

Health-related fitness refers to “components of fitness that are affected favourably or unfavourably by habitual physical activity and relate to health status” (Bouchard and Shephard, 1993). The components of health-related fitness include the morphological (e.g. body mass index, abdominal visceral fat and bone density), muscular (e.g. strength and endurance), motor (e.g. agility, flexibility and balance), cardiorespiratory (e.g. maximal aerobic power, lung function and blood pressure) and metabolic (e.g. glucose tolerance, insulin sensitivity and lipid concentrations). Performance-related fitness is characterised by factors such as motor skills, muscular power and strength, body composition and motivation (Bouchard and Shephard, 1993) and is specific to certain types of athletic performance. As this report card is aimed at describing the physical activity environment and behaviour in the context of promoting health in children and youth, the focus of this indicator is on health-related fitness and not performance-related fitness.

Cardiorespiratory Fitness

Cardiorespiratory fitness is typically assessed by the measurement or estimation of maximal aerobic power, or VO_{2max} (the maximum volume of oxygen that can be transported and utilised whilst performing dynamic exercise). Accordingly, VO_{2max} reflects the overall capacity of the cardiovascular and respiratory systems to



deliver oxygen to the skeletal muscles and the ability of the muscles to use this oxygen for energy production. Historically, VO_{2max} has been used extensively to assess performance-related fitness in children, youth and adults and is a prominent component of many fitness test batteries.

Overweight and Obesity (morphological fitness)

Globally, there are a variety of body mass index (BMI) age and sex specific reference standards for identifying children and youth as having overweight or obesity. The method adopted by the Active Healthy Kids Global Alliance was established by the World Health Organisation for school-aged children and adolescents aged 5-19 years (de Onis et al., 2007).

Muscular and Motor Fitness

The main components of muscular fitness are muscle power, strength and endurance (Bouchard and Shephard, 1993) and each of these components can be assessed with a variety of different, validated performance tests that utilise either an externally applied load (i.e. moving weights) or body mass (e.g. push-ups). Tomkinson et al (2017) have recently produced normative values for a variety of physical fitness measures (the Eurofit test battery) for European children and adolescents aged 9-17 years. The Eurofit test battery includes the sit-and-reach test of extent flexibility, handgrip strength (upper body muscular strength), sit-ups (abdominal muscular strength) and bent arm hang (upper body muscular endurance).

In accordance with the Active Healthy Kids Global Alliance, the agreed benchmarks for physical fitness were:

- Percentage of children and youth who meet the interim international criterion-referenced standards for cardiorespiratory fitness (35 and 42 mL/kg/min in girls and boys respectively).
- Percentage of children and youth who met the World Health Organizations' BMI-for-age references standards.
- Percentage of children and youth who meet criterion-references standards for muscular strength.
- Percentage of children and youth who meet criterion-referenced standards for muscular endurance.
- Percentage of children and youth who meet criterion-referenced standards for flexibility.

As physical fitness is comprised of multiple components it was agreed that cardiorespiratory fitness would be used as the primary indicator for grade allocation and the other components would be described within the narrative for



the physical fitness indicator. This approach has been used previously in the 2016 United States Report Card.

Current survey data:

The Active Healthy Kids (Wales) Research Group were unable to identify any nationally representative data for cardiorespiratory fitness, muscular strength, muscular endurance or flexibility that are nationally representative. The Swanlinx project which is delivered through a partnership between Swansea University and the City and County of Swansea Council, provides the largest dataset on children's physical fitness but this is currently limited to the Swansea geographical area. There are nationally representative data from the Child Measurement Programme for Wales that provide valid prevalence estimates of overweight and obesity, but these data are limited to children aged 4 and 5 years.

Deciding on a Grade:

Based upon the limited availability of nationally representative data that spans the child and adolescent age range, an INCONCLUSIVE grade was agreed for the physical fitness indicator.

Considerations/Thoughts for the future:

There is little doubt that levels of overweight, obesity and physical activity among children and adolescents in Wales are poor. There is some limited evidence that metabolic fitness - a key determinant of cardiovascular health - may also be poor, especially among young people who have obesity, low cardiorespiratory fitness and who live in socially disadvantaged communities. There is evidence that cardiorespiratory fitness may have a stronger inverse relationship with mortality than physical activity (Erikssen et al., 1998) and, evidence also now shows that low cardiorespiratory fitness in children is associated with all-cause mortality in later life (Högström and Nordström, 2016). It would appear imperative, therefore, that national health surveillance includes the objective measurement of physical fitness to enable the monitoring and evaluation of the effectiveness of public health interventions. The Swanlinx project exemplifies the systematic approach to the large-scale collection of physical fitness data that is required and should be supported.



Data Sources for the Physical Fitness Grade

Sport Wales: <http://sportwales.org.uk/>

- 5x60 - <http://sport.wales/community-sport/education/5x60.aspx>
- Dragon Multi Skills & Sport - <http://sport.wales/community-sport/education/dragon-multi-skills--sport.aspx>
- Sustrans Wales: <http://www.sustrans.org.uk/wales>
- British Heart Foundation: <https://www.bhf.org.uk/heart-health/children-and-young-people>
- [https://www.swansea.ac.uk/media/Swan-Linx%20Swansea%20Schools%20Fitness%20Fun%20Day%20feedback%20report%20\(2015\).pdf](https://www.swansea.ac.uk/media/Swan-Linx%20Swansea%20Schools%20Fitness%20Fun%20Day%20feedback%20report%20(2015).pdf)
- <http://activehealthykidswales.com/maps/swanlinx/home>
- <http://www.happenwales.co.uk/>

References

Bouchard, C and Shephard, RJ. Physical Activity, Fitness, and Health: The Model and Key Concepts. In, Physical Activity, Fitness, and Health. Consensus Statement. Human Kinetics Publishers, 1993.

de Onis, M., Onyango, AW., Borghi, E., Siyam, A., Nishida, C and Siekmann, J. Development of a WHO growth reference for school-aged children and adolescents. Bulletin of the World Health Organisation 2007; 85: 660-667.

Tomkinson, GR., Carver, KD., Atkinson, F., Daniell, ND., Lewis, LK., Fitzgerald, JS., Lang, JJ and Ortega, FB. European normative values for physical fitness in children and adolescents aged 9-17 years: results from 2 779 165 Eurofit performances representing 30 countries. British Journal of Sports Medicine 2017; 0: 1-13. Doi:10.1136/bjsports-2017-098253.

Erikssen, G., Liestøl, K., Bjørnholt, J., et al. Changes in physical fitness and changes in mortality. Lancet 1998; 352: 759-62.

Högström, G and Nordström, AN. Aerobic fitness in late adolescence and the risk of early death: a prospective cohort study of 1.3 million Swedish men. International Journal of Epidemiology 2016; 45; 1159-68.



Physical Literacy

INC



The Research Work Group decided that it was important to include this additional indicator to reflect the work being completed in Wales.

Sport Wales adopts Whitehead's definition of physical literacy, namely: "the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life" (Whitehead, 2017). Physical literacy is considered a 'holistic' concept and acknowledges the physical, affective and cognitive domains as equally important (Edwards *et al.*, 2017). Recent developments have acknowledged the 'social element' of physical literacy alongside the affective, physical and cognitive domains (Australian Sports Commission, 2017). Sport Wales' definition is comprised of physical skills, confidence, motivation, knowledge and understanding and lots of opportunities and illustrated in Figure 1.

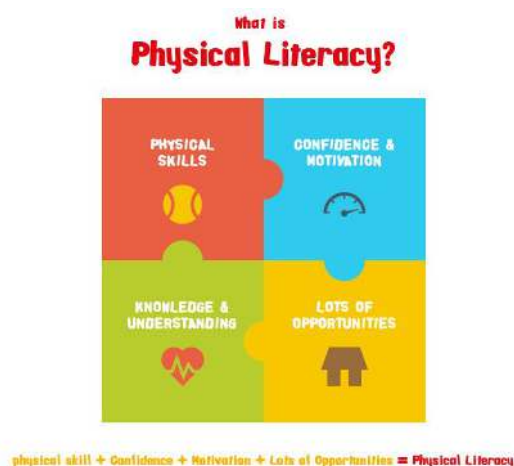


Figure 1. Sport Wales' definition of physical literacy (image from Sport Wales).



Despite being a lifelong concept, work in Wales has primarily centred on youth populations. In the past, Welsh Government and Sport Wales have invested into related programmes such as the Physical Literacy Programme for Schools. Further, Sport Wales have focused much attention on physical literacy as an outcome of successful programme delivery.

In collaboration with Swansea University, Glyndwr University and Edge Hill University, Sport Wales designed a national measure of applied Physical Competence for children aged 8-14 years old called the “**Dragon Challenge**”. Physical Competence is an important component of Physical Literacy and can be defined as “one’s ability to move with competence in a wide variety of activities” (Edwards *et al.*, 2017, p. 118). Physical Competence includes the acquisition of health and skills related components of fitness (e.g. aerobic fitness, strength, flexibility, agility, balance, coordination, power, reactions and speed), as well as fundamental movement skills like catching, throwing and running. Research suggests that higher physical competency levels will cause a positive trajectory toward perceived competence, health-related fitness and, sequentially, physical activity levels (Fowweather *et al.*, 2014; Holfelder & Schott, 2014; Robinson *et al.*, 2015; Lubans *et al.*, 2010; Stodden *et al.*, 2008). The Dragon Challenge assesses physical competence skills in the areas of ‘stability’ (balancing the body in one place or while in motion), ‘locomotion’ (moving the body in any direction from one point to another) and ‘manipulative skills’ (handling or controlling objects with the hand, foot or an implement). See Dragon Challenge video: <https://youtu.be/ISPLtwDrgRM>.

Participants perform nine tasks in a circuit that require single or combinations of skills to accomplish a goal. The circuit is designed to be fun, engaging and challenging. Throughout the circuit, participants are also required to use movement concepts such as spatial awareness (changes in direction and levels) and awareness of effort (changes in speed, force and flow) in relation to objects, goals and boundaries, as well as, cognitive attributes such as confidence, decision-making and understanding the environment. The participants are timed whilst they complete the circuit, and are marked by trained assessors on the quality of the movements and the completion of the end goal for each task. These are used to calculate an Overall Dragon Challenge Score, which provides a single observation of a participant’s physical competence at the time of testing (Stratton *et al.*, 2015).

Current data:

The Research Work Group explored the best available representative data to assign a physical literacy grade. In doing this, the Group divided the concept into four sub-indicators: Physical Competence, Motivation, Confidence and Knowledge and Understanding.



There was no available data for the affective (Motivation and Confidence) and cognitive (Knowledge and Understanding) domains. That said, data from the Dragon Challenge offered nationally representative Physical Competence data. In 2017, 4355 children aged 10-12 years completed the Dragon Challenge obstacle course (Central, $n=875$; South East, $n=1238$; Mid & West, $n=1336$; North, $n=906$). Results concluded that 62% children did not achieve an expected level of physical competence (bronze/silver awards) leaving 38% children with a good level of physical competence. The 38% of children meeting the 'good level' of physical competence translated to a D+ grade for Physical Competence.

Deciding on a Grade:

The Research Work Group decided to grade Physical Literacy as inconclusive based on the limited available data.

Considerations/Thoughts for the future:

- There are limited empirical research around the concept of physical literacy **internationally**.
- Current research does not account for the **holistic** nature of the concept. That is, research tends to separate the domains and does not consider interactions between the domains.
- As such, there is a need to be more creative with developing approaches to measure/assess physical literacy beyond the constructs of physical proficiencies, from a more holistic perspective (Edwards *et al.*, 2018).
- Physical literacy is both integrated and diverse - assessment/measurement might be viewed differently in different cultures. Therefore, a robust approach is needed to deciding which assessment to use, and why for a specific context (Barnett *et al.*, under review).
- Further data collection is needed across Wales to allow the Research Work Group to assign a grade to this indicator in future Report Cards.



Data Sources for the Physical Literacy Grade

- Sport Wales: <http://www.sport.wales/>
- Physical Literacy - <http://physicalliteracy.sportwales.org.uk/en/>
- 5x60 - <http://sport.wales/community-sport/education/5x60.aspx>
- Dragon Multi Skills & Sport - <http://sport.wales/community-sport/education/dragon-multi-skills--sport.aspx>
- Physical Literacy Programme for Schools (PLPS) - [http://sport.wales/community-sport/education/physical-literacy-programme-for-schools-\(plps\).aspx](http://sport.wales/community-sport/education/physical-literacy-programme-for-schools-(plps).aspx)
- International Physical Literacy Association: <https://www.physical-literacy.org.uk/>
- Australian Sports Commission: https://www.ausport.gov.au/participating/physical_literacy
- Edwards, L.C., Bryant, A.S., Keegan, R.J., Morgan, K. & Jones, A.M. (2017). Definitions, Foundations and Associations of Physical Literacy: A Systematic Review. *Sports Medicine*. 47(3): 113 - 126.
- Edwards, L.C., Bryant, A.S., Keegan, R.J., Morgan, K., Cooper, S-M. & Jones, A.M. (2017). 'Measuring' Physical Literacy: A Systematic Review of Empirical Findings. *Sports Medicine*. DOI: 10.1007/s40279-017-0817-9.

Family and Peers

D



Background:

There are currently no specific recommendations for parental or peer influence on children/young people's sports participation or physical activity, although many studies have shown a relationship between parent and childhood activity (Trost *et al.* 2003).

Physical Activity Guidelines:

The UK-wide Chief Medical Officers' guidelines for physical activity for parents/adults, recommend that over a week, activity should add up to at least 150 minutes (2 ½ hours) of moderate intensity activity in bouts of 10 minutes or more. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity (Department of Health, 2011). (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213740/dh_128145.pdf)

The benchmarks used by the Research Work Group for this indicator were: (1) Percentage of parents who meet the Global Recommendations on Physical Activity for Health, and (2) Percentage of family members (e.g., parents, guardians) who are physically active with their kids.

Current survey data:

One nationally representative data source was used by the Research Work Group to assign a family and peer grade.

1) National Survey for Wales (2016/17)



The National Survey for Wales collected data on over 10,000 randomly-selected people aged 16 and over across Wales. The 2016/17 survey found that **59% of parents** were moderately active for **150 minutes per week** and **8%** of parents took part in vigorous activity for more than **75 minutes per week**. Further, it was revealed that **31%** of parents took their child to the playground and **20%** of parents took part in informal games with their child such as playing Frisbee.

The National Survey for Wales is representative across all regions in Wales. Given that the data from Family and Peers was derived from only one data source, this may be viewed as a limitation. Likely biases in the results include an over-emphasis on parental involvement as there was a lack of representative data on peers.

Deciding on a Grade:

The Research Working Group assigned a D to this category. After taking percentages of all questions related to family and peers' involvement into account, the proportion of active children was 30%.

Though there was little change in the participation in parents' sport and physical activity, the Family and Peers grade has decreased from D+ to D since the last AHK-Wales report card completed in 2016. Possible explanations for this may be because of the differences in data sources used to generate the grade in 2016 compared to 2018. Further, in 2016, the +/- attributed to each grade denoted strengths/inequalities in the data. This no longer applied in the 2018 as the scoring system changed.

Considerations/Thoughts for the future:

Parents:

- Parents are encouraged to participate in sport, dance and physical activity. Parents should try to reduce their own and their child/children's sitting time (sedentary time), especially time spent in front of screens.
- Parents are encouraged to regularly plan for, and engage in physical activity or sports with their children, particularly in the evenings, weekends and holidays. Parents should encourage active transport and allow their children to explore physically active challenges within their environment.
- Given that the data source is self-reported, there are no large-scale studies in which physical activity has been measured objectively in adults (parents).
- Since physical inactivity is a problem for children and young people of all ages in Wales (see Overall Physical Activity Levels indicator), interventions could encourage families to be more physically active and reduce sedentary time together.
- Future research needs to focus on the influence of parents on various amounts and types of physical activity and how these change with age.

Peers:



- The data sourced from the National Survey for Wales solely focused on parental physical activity. There was no available data on peers' influence for the 2018 report card.
- A significant effort needs to be made to address the lack of data available on peers' influence.

How to Improve the Family and Peers Grade

Get Active Your Way:

<http://www.nhs.uk/Livewell/fitness/Pages/Activelifestyle.aspx>

60 Active Minutes:

http://change4lifewales.org.uk/families/active_minutes/?lang=en

Wales Coast Path: <http://www.walescoastpath.gov.uk/default.aspx?lang=en>

Sport Wales: <http://sportwales.org.uk/>

- 5x60 - <http://sport.wales/community-sport/education/5x60.aspx>
- Dragon Multi Skills & Sport - <http://sport.wales/community-sport/education/dragon-multi-skills--sport.aspx>

Sustrans Wales: <http://www.sustrans.org.uk/wales>

British Heart Foundation: <https://www.bhf.org.uk/heart-health/children-and-young-people>

Change 4 Life: <http://change4lifewales.org.uk/families/active/?lang=en>



School

Inc



Background:

Since children and young people spend a large amount of their day at school, the school environment represents many opportunities for the promotion and facilitation of physical activity (e.g. PE, extracurricular sports). In the UK, it is recommended that schools provide 120 minutes (2 hours) of physical education on average per week. In addition, research has shown that more physical activity opportunities offered at school (excluding PE), is linked to higher levels of physical activity in children and young people (Carlson *et al.*, 2013). Therefore, it is important for schools to offer extracurricular opportunities to encourage more active pupils. For information on the physical activity guidelines for children and young people, please see 'overall physical activity level' indicator.

The benchmarks for this indicator relates to physical activity opportunities at school and during physical education lessons. The available data for the 2016 report card reported the quantity of data (e.g. time allocated to PE). However, this data did not focus on the quality of PE and School Sport provision offered.

Bernstein's (1977) analytical framework depicts 'high quality' provision as the integration of curriculum, pedagogy and assessment. Children would exhibit the following 10 outcomes if PE and School Sport provision was deemed high quality: commitment, enjoyment, confidence, knowledge and understanding of healthy and active lifestyle, take part in a range of activities, a desire to improve, stamina, suppleness and strength (Department for Education and Skills, 2004). Consideration for quality PE and School Sport is imperative to this indicator as there are clear links between high quality PE and School Sport with: i) new curriculum health and well-



being area of learning and experience (Donaldson, 2015); and, ii) physical literacy (Welsh Government 2017).

Current survey data:

Since 2016, there has been no available or representative data that reported children's PE and School Sport experiences.

Deciding on a Grade:

With no updated and available data since the 2016 report card, the Research Work Group assigned an inconclusive grade to the School indicator.

Considerations/Thoughts for the future:

- Given the upcoming curriculum changes that places an emphasis on health and well-being, nationally representative research on School is required.
- Previous research in this area has focused on the amount of PE and School Sport provision offered to children and young people.
- Future research should investigate the quality of PE and School Sport provision that is nationally representative.
- Further, research should identify factors that influence participation in physical activity at school.
- Research should address the following benchmarks set by the Active Healthy Kids Global Alliance:
 - o % of schools with active school policies
 - o % of schools where the majority ($\geq 80\%$) of students are taught by a PE specialist.
 - o % of schools where the majority ($\geq 80\%$) of students are offered the mandated amount of PE
 - o % of schools where teachers were confident in delivering quality PE lessons % of children that believe PE lessons and school sport help them to have a healthy lifestyle.
- Consideration for the individual competing self-report data, i.e. the PE coordinator completing on behalf of primary school teachers is not representative. As such, caution should be made when analysing such responses.
- Schools should maximise opportunities for pupils to move more and sit less throughout the school day.



Data Sources for the School Indicator

Bernstein, B. (1977). *Class codes and control, towards a theory of educational transmissions* (Vol. 3). London: Routledge and Keegan Paul.

Department for Education and Skills (2004). *Do you have high quality PE and sport in your school? A guide to self-evaluating and improving the quality of PE and school sport*. Nottinghamshire: Crown.

Donaldson, G. (2015). *Successful Futures: Independent Review of Curriculum and Assessment Arrangements in Wales*. Cardiff: Crown.

Welsh Government (2017). Health and Well-being AoLE: Submission to Curriculum & Assessment Group: December 2017. Available at:
<http://gov.wales/docs/dcells/publications/180131-health-and-well-being-en.pdf>



Community and the Environment

INC



The Community and the Built

Environment indicator refers to perceived safety, access, and availability of facilities and spaces that provide opportunities for physical activity in children and young people. There is no specific recommendation for Community and the Built Environment, however research has reported a relationship between the built environment and physical activity (Sallis & Glanz, 2006).

The benchmarks used to grade this indicator are the percentage of children/parents satisfied with the play facilities available in their local area, as well as the percentage of children/parents living in a safe neighbourhood where they can be physically active.

For the 2016 Report Cards, the Research Work Group used the percentage of children/parents satisfied with the play facilities available in their local area to assign a grade to this indicator. Feedback from the largest consultation of its kind in Wales was also used to assist with the grading process. However, for the 2018 Report Card, the data available around these benchmarks were limited.

Current survey data:

- 2) The National Survey for Wales (2016/17) conducted 10,493 face-to-face interviews with one adult (aged 16+) in each household across Wales. From the previous 2014/15 round of interviews, the survey had adjusted questions around perceived safety, access, and availability of facilities and spaces that provide opportunities for physical activity in children and young people.

In 2014/15, the data found 54% and 38% of parents with a child aged 1-10 and 11-15 years, respectively, were satisfied with the play facilities in their local area. Of



the parents with a child aged 1-10 years who were dissatisfied, 83% reported there was a lack of suitable outdoor public places for their child to play, whereas 64% reported a lack of suitable indoor spaces. Additionally, of the parents with a child aged 11-15 years who were dissatisfied, 77% cited a lack of suitable outdoor public places, 79% believed there was a lack of indoor public places, and 64% believed there were too few clubs or organised activities. **However, questions around this information was not included in the 2015/16 round of interviews, therefore no new data was available.**

In 2016/2017, data was available on adults' thoughts about their local area, but this was not specifically geared towards physical activity. The National Survey for Wales found that, when people are asked to think about their local area: 72% felt like they belong; 72% felt that people from different backgrounds get on well together; and 73% felt that people treated each other with respect and consideration. All three of these percentages are lower than they were in 2014-15.

Deciding on a Grade: During the 2018 Report Card grading process, there were limited up-to-date data available around the benchmarks to support a grade for this indicator. Therefore, the Research Work Group decided an inconclusive grade should be assigned.

Considerations/Thoughts for the future:

- Community and the Built Environment indicator decreased from a B in the 2014 Report Card to a C in 2016, however, a grade cannot be assigned for the 2018 Report Card.
- Little to no up to date evidence was available for this indicator. Further data collection, research, and interventions are needed to reduce the barriers towards physical activity and play.
- Improvements in perceived safety, access, and facilities may produce improvements in physical activity, outdoor and active play, and reductions in sedentary time.



Government

C+



Background:

Unlike the other indicators there are no purely objective measures that can be used to inform the report card. However, we did utilise the WHO Europe Health-enhancing physical activity (HEPA) policy audit tool (PAT).

(http://www.euro.who.int/__data/assets/pdf_file/0010/286795/Health-enhancing_physical_activityHEPAPolicy_audit_toolPATVersion_2.pdf?ua=1). This tool provided an internationally recognised framework that offers both credibility and potential continuity if used in future. It could also offer potential comparability if adopted across other countries.

In interpreting this indicator we included national policies, strategies, action plans, legislation and a few other advisory and technical documents that have a direct bearing on children's physical activity, that were still 'active'. Twenty-one national instruments were identified.

Current survey data:

Guided by the HEPA PAT tool we considered the evidence relating to key policy domains that influence physical activity in children including: Health, Education, Sport, Transport, Environment, Design & Planning, Play, Sustainable Development, and Cross-cutting (i.e. cut across all policy portfolios). Within each of these domains a range of key 'elements' were identified from the HEPA PAT tool refined by the research working group (RWG), that could individually or collectively impact on the effectiveness of the policy instrument. These elements included:

- Number & breadth of policies
- Identified supporting actions
- Identified accountable organisation(s)
- Identifiable reporting structures
- Monitoring & Evaluation plans
- Identified funding/ resourcing



Deciding on a Grade:

Whilst the HEPA PAT tool was very helpful in analysing this indicator it was still a largely subjective process, and so a simple scoring system was developed using the 'elements' described in the tool. Each element was ascribed a percentage score 'weighted' to reflect the element's perceived importance in translating the policy instruments effectively. So, for example, the number of policies was deemed less important than the identifiable supporting actions. After initial 'weighting' by the indicator lead experts, the final weighting was considered, refined and agreed by the whole RWG.

The final scoring matrix was as follows:

- No. and breadth of relevant policies - 10% (5% No. & 5% Breadth)
- Identified supporting actions - 20%
- Identified accountable organisation - 25%
- Identifiable reporting structures - 15%
- Identified funding and resources - 20% (5% no. of identified national programmes & 15% funding)
- Monitoring & Evaluation Plan - 10%

Applying this led to an overall grade of 54% that translates to a C+. Since the 2016 AHK-Wales report card, the Government grade has decreased slightly from B- to C+. One possible explanation for this change may be the use of the HEPA PAT tool in 2018 which made the process less subjective.

Considerations/Thoughts for the future:

Though still in existence and 'active', some of the policies are now quite old. This is important to take into account because some of the original and intended activities, funding mechanisms and delivery systems will have changed over time, particularly during this period that incorporates the global economic downturn that resulted in significant organisational, structural and systemic changes. It should also be noted that a new curriculum is being developed for settings and schools in Wales. Although this proposed curriculum cannot bolster this year's report card grade, it illustrates future governmental involvement and institutional commitment to the development of relevant policies and strategies to support physical activity among the youth population.

Fourteen of the twenty-one policies have identifiable actions related to physical activity although actions specific and relevant to physical activity were limited across Welsh policies, as some only allocated one supporting action or requirement, and others have identified actions that are seemingly too broad.

Fourteen of the twenty-one policies identified 'lead' organisations, who support and take responsibility for some of the identified physical activity policies and provisions. However, although 'leads' have been identified there is often no reference to accountability for the delivery of specific actions in many of the



policies. Furthermore, it should be noted that in some cases, accountability is limited to Welsh Government Ministers or a single agency, which could potentially be seen as a problem and reduce overall accountability because often the delivery may be dependent on other organisations or individuals for whom there is no obvious line of accountability or incentive to comply.

There were often no apparent chains of command or clear lines of authority, communication and duties. However, it seems evident that in order to improve the effectiveness of physical activity policies and the overall government's role in implementing them, a clear reporting structure ought to be defined.

Five of the twenty-one policies articulated an evaluation and monitoring plan. Although this number is quite low, relative to total number of identified policies, four of the five are mainstream policy areas directly affecting physical activity. Additionally, it is worth noting that of the various types of policy (e.g., legislation, strategy, action plan, guidance) that the RWG identified for this indicator, all of the 'Action Plans' outlined monitoring and evaluation strategies. Perhaps this is because action plans are time bound and generally tied to specific measurable objectives or targets and thus easier to evaluate, whereas governmental legislation is on-going and tends to remain broad in scope.

Five of the twenty-one policies identified specific funding to support their identified actions. However, most of these were referenced as 'identifying' or 'reviewing' funding opportunities rather than directly providing evidence of already allocated or dedicated provisions.

As part of the government's commitment to providing and promoting physical activity in Wales, it has supported a number of national programmes designed to increase physical activity among children and young people. The RWG identified nine of these programmes as evidence of national "resources" geared towards increasing physical activity (PA) outcomes, whereby each programme can be seen as a PA opportunity for children, or a promotional initiative to encourage future PA among this population.



Data Sources for the Government Grade

Welsh Government: <https://gov.wales/?lang=en>

Public Health Wales: <http://www.wales.nhs.uk/sitesplus/888/home>

Sport Wales: <http://sport.wales/>

Natural Resources Wales: <http://naturalresources.wales/?lang=en>

Play Wales: <http://www.playwales.org.uk/eng/>

Sustrans Cymru: <https://www.sustrans.org.uk/wales/our-work-wales>

Future Generations Commissioner for Wales: <https://futuregenerations.wales/>

Children's Commissioner for Wales: <https://www.childcomwales.org.uk/>

Planning Portal:

https://www.planningportal.co.uk/wales_en/info/9/policy_and_legislation/60/planning_policy_in_wales

Inspectorate for Education and Training in Wales:

<https://www.estyn.gov.wales/language>

Welsh Local Government Association: <http://wlga.wales/home>



References

1. Unpublished Health Behaviour in School-aged Children Wales Survey 2017/18.
2. National Survey for Wales 2016/17. <https://gov.wales/statistics-and-research/national-survey/?lang=en>. Accessed February 20, 2018.
3. Play Sufficiency Assessment Surveys 2016. <http://www.playwales.org.uk/eng/sufficiency>. Accessed March 19, 2018.
4. Tyler R, Fowweather L, Mackintosh KA, Stratton G. A Dynamic Assessment of Children's Physical Competence: The Dragon Challenge. *Med Sci Sports Exerc.* 2018 Jul 31; DOI:10.1249/MSS.0000000000001739 [Epub ahead of print]
5. Edwards LC, Bryant AS, Keegan RJ, et al. Definitions, Foundations and Associations of Physical Literacy: A Systematic Review. *Sports Med.* 2017; 47(3): 113 - 126.
6. Health-enhancing physical activity (HEPA) Policy Audit Tool (PAT). http://www.euro.who.int/_data/assets/pdf_file/0006/151395/e95785.pdf. Accessed February 10, 2018.
7. Stratton G, Williams C, Brophy S, et al. Active Healthy Kids Report Card 2014 - Wales. <http://www.swansea.ac.uk/media/AHK-Wales%202014%20final.pdf>. Accessed May 5, 2018.
8. Tyler R, Mannello M, Mattingley R, et al. Results From Wales' 2016 Report Card on Physical Activity for Children and Youth: Is Wales Turning the Tide on Children's Inactivity? *J Phys Act Heal.* 2016; 13(11 Suppl 2): S330-6.
9. Inchley J, Currie D, Young T, et al. Health Policy for Children and Adolescents, No. 7. Growing Up Unequal: Gender and Socioeconomic Differences in Young People's Health and Well-being. *Health Behaviour in School-aged Children (HBSC) Study: International Report from the 2013/2014 Survey.* Copenhagen, Denmark: WHO Regional Office for Europe; 2016.
10. United Nations Convention on the Rights of Children - Children's Rights in Wales. Available at: <http://www.childrensrighswales.org.uk/>. Accessibility verified August 10, 2018.
11. Active Travel (Wales) Act 2013. Available at: <http://www.legislation.gov.uk/anaw/2013/7/contents/enacted>.
12. Well-being of Future Generations (Wales) Act 2015. Available at: <https://gov.wales/topics/people-and-communities/people/future-generations-act/?lang=en>
13. Welsh Government. Physical Literacy - an all-Wales approach to increasing levels of physical activity for children and young people; 2013. Available at: www.sportwales.org.ukmedia/1151209/sports_and_physical_activity_review
14. National Institute for Health and Clinical Excellence Website. Available at: <https://www.nice.org.uk/>. Accessibility verified August 10, 2018.



15. Aubert S, Barnes JD, Abdeta C, et al. Global Matrix 3.0: Physical Activity Report Card Grades for Children and Youth: Results and Analysis from 49 Countries. J Phys Act Heal; 2018.
16. Chief Medical Officer. Start Active, Stay Active; 2011. Available at: <http://www.bhfactive.org.uk/userfiles/Documents/startactivestayactive.pdf>
17. National Institute for Health and Clinical Excellence. PH17 - An audit of the implementation of NICE public health guidance on promoting physical activity for children and young people. Available at: <https://www.nice.org.uk/contents/item/display/30826>. Accessibility verified August 10, 2018.
18. BHF National Centre. Sedentary behaviour; 2012. Available at: http://www.bhfactive.org.uk/files/525/sedentary_evidence_briefing.pdf
19. Tyler R, Mackintosh K, Brophy S, et al. Swan-Linx: Fitness Fun Day Report - Swansea Schools; 2015. [https://www.swansea.ac.uk/media/Swan-Linx%20Swansea%20Schools%20Fitness%20Fun%20Day%20feedback%20report%20\(2015\).pdf](https://www.swansea.ac.uk/media/Swan-Linx%20Swansea%20Schools%20Fitness%20Fun%20Day%20feedback%20report%20(2015).pdf)
20. Public Health Wales. The Child Measurement Programme for Wales 2016/17. Available at: <http://www.wales.nhs.uk/sitesplus/documents/888/12743%20PHW%20CMP%20Report%20%28Eng%29.pdf>.
21. Whitehead M. International Physical Literacy Association: Physical Literacy Definition; 2017. [Online]. Available at: <https://www.physical-literacy.org.uk/> (Accessed on: 11th February 2017).
22. Edwards LC, Bryant AS, Keegan RJ, et al. 'Measuring' Physical Literacy: A Systematic Review of Empirical Findings. Sports Med. 2018; doi: 10.1007/s40279-017-0817-9.
23. Trost SG, Sallis JF, Pate RR, et al. Evaluating a Model of Parental Influence on Youth Physical Activity, J. Preventive Medicine; 2003. 25(4): 277-282.
24. Bernstein B. Class codes and control, towards a theory of educational transmissions (Vol. 3); 1977. London: Routledge and Keegan Paul.
25. Department for Education and Skills. Do you have high quality PE and sport in your school? A guide to self-evaluating and improving the quality of PE and school sport; 2004. Nottinghamshire: Crown.
26. Donaldson G. Successful Futures: Independent Review of Curriculum and Assessment Arrangements in Wales; 2015. Cardiff: Crown.
27. Welsh Government. Health and Well-being AoLE: Submission to Curriculum and Assessment Group: December 2017. Available at: <https://gov.wales/docs/dcells/publications/180131-health-and-well-being-en.pdf>
28. Sallis JF, Glanz R. The role of Built Environments in PA, Eating and Obesity in childhood, Future of Children; 2006. 16(1). Available at: <http://files.eric.ed.gov/fulltext/EJ795891.pdf>