

ACTIVE PLAY, PHYSICAL ACTIVITY AND FUNDAMENTAL MOVEMENT SKILLS



Literature Review

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Context: This brief literature review provides the background literature to the evaluation of Inspiring Scotland's Active Play Programme. The evaluation has the following research question: does the implementation of an active play programme improve physical activity levels and fundamental movement skills competency in children?

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Inspiring
Scotland

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active play

BACKGROUND: INSPIRING SCOTLAND AND ACTIVE PLAY

Inspiring Scotland is a highly engaged venture philanthropy organisation designed and developed to transform Scotland's charities and change lives. Its aims are to tackle social issues in a way that brings greater cohesion and, through this, higher impact. In partnership with the Scottish Government, Inspiring Scotland has invested in play through their Go2Play fund since 2010, creating a track record in successfully supporting the development and expansion of free play in disadvantaged communities across Scotland. They have helped develop the play sector and create greater play opportunities in Scotland's most deprived communities. In 2014 Go2Play delivered an active play pilot with one venture based in east end of Glasgow. In 2015, the Go2Play fund invested in Play Ranger activities, Family Support for Play and further Active Play. In August 2015, Inspiring Scotland began a collaboration with the University of Strathclyde to help evaluate their active play investment, which are funded by the Scottish Government's Children and Families Directorate through the Go2Play fund. The aim of this evaluation is to determine if the implementation of an active play programme improves physical activity levels and fundamental movement skills in children.

Increasing physical activity levels and improving physical literacy (linked to fundamental movement skills) has been recognised within the Scottish Government's four policy areas: health, sport, education and, children and young people. The Active Scotland (2016) Outcomes Framework details Scotland's ambitions for sport and physical activity, with direct reference to increasing physical activity and developing, 'physical confidence and competence from the earliest age'. Active play may have the potential to achieve the aforementioned outcomes, therefore the primary aims of this brief literature review will be to examine evidence on the role of active play in increasing physical activity levels and fundamental movement skills. Secondary aims are to highlight how active play might lead to, or maintain, sports participation; identify the potential for active play to improve academic attainment and finally, the facilitators and barriers of active play.

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GLOSSARY

1. **Physical Activity (PA):** “any bodily movement produced by skeletal muscles that results in energy expenditure” (Caspersen, Powell & Christenson, 1985, p. 126). Examples include; sports participation, active transport and physical education among others.
2. **Moderate to Vigorous Physical Activity (MVPA):** MVPA is often described in lay terms as being accompanied by an increase in breathing, heart rate and body temperature and vigorous PA marks a rapid increase in heart rate and heavy breathing ([Department of Health, 2011](#)). The more technical definition of MVPA is PA with an energy cost of >2.9 but <6.0 times resting energy expenditure.
3. **Physical Activity Guidelines ([Department of Health, 2011](#)):**
 - a. Pre-school aged children: Children who cannot walk should be encouraged to be physically active through floor and water based activities. If they are able to walk, they should be physically active for three hours across the whole day at any intensity.
 - b. School aged children (5-18 years): Should participate in at least sixty minutes of MVPA per day. Activities which strengthen muscle and bones should be included at least three times a week. Lastly, all children should minimise amount of time spent being sedentary.
4. **Domains of PA:** Activities an individual can participate in, which contributes to their overall PA, examples pertaining to children are; physical education, active transportation, active play and sport.
5. **Active Healthy Kids Report Card:** First developed in Canada, it has been replicated in fourteen other countries and uses a grading system to report the performance of a country’s child health behaviours. It is a useful resource for identifying surveillance data on PA and health in children and adolescents. The first [Active Healthy Kids Scotland Report Card](#) was published in 2013
6. **Physical Literacy:** It is not just about the physical movement, it is the child’s ability to move with competence, motivation and confidence in a variety of sports and activities which develop them as a person (Whitehead, 2001).
7. **Fundamental Movement Skills (FMS):** A set of skills which children should be competent in, such as; throwing catching, running and jumping (Lubans et al., 2010).

Fundamental movement skills are usually characterised by object control and locomotor skills. FMS are somewhat related to physical literacy as they encourage children to move with competence. Unlike Physical Literacy, FMS does not develop motivation and confidence to be physically active.

- 8. Free Play:** Behaviour that is freely chosen, personally directed and intrinsically motivated (Scottish Government, 2013).
- 9. Play:** Similar to free play, play are activities which are freely chosen, personally directed, intrinsically motivated, spontaneous and enjoyable (Brockman, et al., 2010). Play typically involves minimal physical movement, examples include; playing board games or drawing (British Heart Foundation, 2015).
- 10. Active Play:** Encompasses components of traditional play but extends to unstructured PA which takes place outdoors in a child's free time (Veitch, et al., 2007). Active play requires the use of large muscle groups in activities such as running, catching or jumping which may increase the heart rate to MVPA levels (British Heart Foundation, 2015).

1.0 INTRODUCTION

Play is imperative for a child's physical, psychological and mental well-being, and is influenced by access to play opportunities and parent's awareness of the benefits of play (Scottish Government, 2013). Furthermore, play is central to academic attainment, building resilience, forming relationships and decision making (Scottish Government, 2013). Free play is acknowledged as one of the most effective ways to achieve the aforementioned benefits. Presently children's play opportunities are limited, causing negative health consequences. Developing an active play intervention (with a free play component), which primarily aims to increase MVPA levels and improve FMS in children, may be an additional way of achieving the aforementioned benefits of free play, but with increased focus on the physical benefits.

1.1 BENEFITS OF MVPA

Regular MVPA is associated with a wide range of health benefits in childhood, including improved blood cholesterol, blood pressure, weight management, bone density and mental wellbeing, according to a systematic review conducted by Janssen and LeBlanc (2010). Despite the well documented health benefits linked to regular MVPA, many of Scotland's children and adolescents are not reaching the guidelines of 60 minutes of MVPA per day. The HBSC (2015), for example, reported that only 30% and 21% of 11-year-old boys and girls reached the guidelines, respectively, and this was only 15% and 11% by the age of 15 years. Physical inactivity is costing the Scottish NHS approximately £94 million per year which is of great concern, particularly when there is a trend that PA levels decline from childhood into adulthood (Scottish Health Survey, 2015). Increasing MVPA levels in childhood is imperative, both because of the negative health consequences of low PA in childhood, and because higher levels of MVPA are likely to continue into adulthood (Hallal et al., 2006).

1.2 LINKS BETWEEN ACTIVE PLAY AND MVPA

Recently, researchers have suggested active play, defined as, "unstructured physical activity which takes place outdoors in a child's free time, and increases heart rate" may be a key area for improving PA levels of children (Veitch, et al., 2007; British Heart Foundation, 2015). For example, Janssen (2014), comparing various domains of PA (e.g. play, active

transportation, school recess, PE, sport) suggested that active play had the greatest potential for population-wide gains in MVPA in Canada, in part because active play could be undertaken every day of the year (in contrast to school-based activity which could take place on school days, 180-190 days per year). Katzmarzyk (2014) also suggested that the higher levels of MVPA among children in low-middle income countries compared to high-income countries was attributable largely to higher levels of active and outdoor play. Section 4.0 summarises active play surveillance in Scotland since 2010.

The importance of play is recognised by the U.N. General Assembly (1989) as a basic right of every child and in 2013, the Scottish Government produced its first national play strategy which emphasises the benefits and importance of play in Scottish Children. Active play has wider benefits beyond increasing PA levels in children, including mental wellbeing, improved academic attainment, and FMS.

This literature review aims to: summarise evidence on the role of active play in MVPA and FMS, highlight how active play might lead to or maintain sports participation; identify the potential for active play to improve academic attainment and finally, the facilitators and barriers of active play.

2.0 ACTIVE PLAY AS A STRATEGY FOR PROMOTING MVPA AND FMS

Despite the aforementioned benefits of active play, it is a domain of PA which has been scarcely examined as the recent International Active Healthy Kids Report Card highlighted (Tremblay et al., 2014). In fact, only 5 out of 15 countries involved in producing a report card in 2014, surveyed active play (Tremblay et al., 2014). In addition, recent systematic reviews have considered the amount of MVPA which is typically being accumulated by children in other domains of PA, focused particularly on school-based activity. In primary school PE, a systematic review by Hollis et al. (2015) found that as little as 30% of PE class time is spent in MVPA; in primary school break time, a systematic review by Martin et al. (2016) found that as little as 6 minutes of MVPA per day is typically accumulated; in active commuting to and from school, a systematic review by Martin et al. (2016) found that under 10 minutes of MVPA per day is accumulated, and that is only on school days and among active commuters (about half of the Scottish primary school population, Reilly et al., 2014). No such reviews have been undertaken on the MVPA

accumulated during active play: active play is a domain of PA which has been neglected in previous research.

As noted above, active and outdoor play is probably making a substantial contribution to daily MVPA among children in low-middle income countries. As argued by Janssen (2014) active play has the potential to make a major contribution to daily MVPA among children in high-income countries, in part because it probably involves a good deal of MVPA, and because it could (or should) be something children do every day (in contrast to school which children attend around 180-190 days per year).

2.1 ACTIVE PLAY AND PA (RECENT EMPIRICAL STUDIES)

Despite limited research on the contribution of active play to MVPA, there is a suggestion that active play and habitual PA are associated. King et al. (2010) found a strong positive correlation between enjoyment of active play and outdoor play to objectively measured PA in a large sample of English 7 year olds. Similarly, Brockman et al. (2010) found that English boys and girls aged 10 to 11 years who reported participating in active play five times a week, achieved 5.2 and 7.2 minutes more minutes of objectively measured MVPA per day compared to those who reported never participating in active play.

Active play also has the potential to generate high MVPA levels relative to other domains of child PA. Brazendale et al. (2015) concluded that children aged 7 years in one study in the USA spent 35% of their time in MVPA during active play compared to more structured games and sports: - soccer (29%), kickball (17%), dodgeball (34%) and relay races (21%). Unusually, in this study active play was conducted indoors.

Children are likely to have higher MVPA when playing outdoors compared to indoors. Gray et al. (2015) conducted a systematic review aimed at investigating the relationship between outdoor time on PA in children (3-12 years). From the sixteen studies reviewed, all reported that outdoor time was positively related to PA (Gray et al., 2015). Skala et al. (2012) highlighted that children spend more time in MVPA during PE when participating in PE outdoors (41%) compared to indoors (36%). Perhaps of greater concern is that children are spending much more time indoors compared to outdoors after school hours, and this is probably limiting their opportunities for active play (Pearce et al., 2014). Developing an active play intervention may therefore be a good way to promote MVPA and outdoor activity in children.

2.2 ACTIVE PLAY AND FMS

Physical literacy is the child's ability to move with competence, motivation and confidence in a variety of sports and activities (Whitehead, 2001). Somewhat linked to physical literacy are FMS, which are a set of skills which children should be competent in, such as throwing catching, running and jumping among others (Lubans, 2010). FMS are usually characterised by object control and locomotor skills. There is a consensus among researchers that being competent in FMS improves the child's ability to master basic movements required for more complex sports which may increase PA levels as children mature, however there is no strong empirical evidence to support this. (Hardy et al., 2012).

Despite the recognised importance of FMS, researchers have noted that FMS is poor in modern children (Hardy et al., 2012). Hardy et al. (2012) assessed seven FMS in a large sample of Australian children and found the percentage who had low competency in all FMS ranged from 46% in boys aged 14 years to 98% of girls aged 9 years. Additionally, Hardy et al. (2012) highlighted that low FMS was more prevalent in those from lower socio-economic backgrounds and those who had poor cardio-respiratory fitness (Hardy et al., 2012).

Although research on FMS among children is limited in the UK, and it is not part of public health surveillance in the UK, it appears that FMS is generally poor in children from high income countries. Interestingly, there is research to suggest that FMS and PA levels are related. Lubans et al. (2010) reviewed thirteen articles which examined the relationship between FMS and PA. Of the thirteen studies reviewed, eleven showed an association between FMS and at least one component of PA (i.e. structured or un-structured PA) (Lubans et al., 2010). However, the majority of these studies used self-report measures of PA which is not the most accurate measurement method.

In summary, FMS is poor in contemporary children from high income countries and needs to be developed from an early age as it underpins physical literacy. Canadian Sport for Life (2014) suggested that physical literacy is the foundation for participation and excellence in both PA and sport and those who are physically literate are more likely to be active for life. Therefore, interventions which improve FMS could be important in developing physical literacy and PA across the life course. Jones et al. (2011) developed an intervention in Australian pre-school aged children which aimed to improve FMS compared to a control group. The intervention was a 20-week programme which consisted of staff delivering specific games to improve a FMS skill, and a free play component where children

could practice the skill they had learned. Jones et al. (2011) concluded that FMS had significantly improved at follow-up (6 months) compared to baseline ($p < 0.001$; Cohen's $d = 0.47$). Furthermore, there was a significant increase in objectively measured PA in the intervention group compared to the control ($p = 0.01$; Cohen's $d = 0.40$).

Therefore, it seems that FMS and PA could be improved through active play, which was also reinforced by Kantomaa et al. (2011) who found that a low active play preference at 8 years old was associated with low PA at 16 years in Finland.

2.3 ACTIVE PLAY AND SPORT

Sport is a type of PA that can contribute to children's daily MVPA. The Scottish Health Survey (2015) and the Scottish Household Survey (2015) are two national self/parent-report surveys which report that 67% (2-15 years) and 55% of children (6-12 years) are participating regularly in sport, respectively. However, evidence suggests that participation in sport decreases across childhood and adolescence, and in adulthood. Telama and Yang (2000) conducted a longitudinal study to track sports participation from 9 to 27 year olds. They found that daily sports participation decreased from approximately 37% at aged 9 to 17% at aged 27 for men and women combined (Telama & Yang, 2000). Although, in these studies sports participation was assessed using subjective questionnaires which have validity and reliability concerns.

There have been suggestions that active play participation in childhood can help continue a life of PA and sports participation in adulthood. Currently, the traditional model for sports participation presumes that all children will participate in sport. However, the Aspen Institute (2015) presented two key themes which have been missing from the traditional model: - physical literacy (somewhat linked to FMS but encompasses more components linked to sport and not just the skill in isolation) and play (see appendix two for the traditional and new model). The authors noted that physical literacy needs to be developed at all levels and abilities which is imperative to an active life as it develops a child's confidence, ability and desire to be physically active for life (The Aspen Institute, 2015). The second key component is reintroducing free play which instils intrinsic motivation in the child and allows them to develop their physical literacy in a fun, less-structured way before potentially progressing onto sport if the child wishes to do so (The

Aspen Institute, 2015). Therefore, it appears that active play could play a key role in developing physical literacy and a life of PA and sport.

2.4 WIDER DEVELOPMENTAL BENEFITS OF ACTIVE PLAY, INCLUDING ACADEMIC ATTAINMENT

Active play has wider benefits beyond increasing PA: it develops creativity, imagination as well as cognitive and emotional strengths. Creativity is required for everyday life, to solve problems and adapt to changes in life circumstances. Bowers et al. (2014) found that there was a significant positive relationship between participating in unstructured activities in childhood to overall creativity in adulthood.

Reviews also suggest a likely positive effect of MVPA on cognition (specifically executive function, Guiney & Machado 2013), and on academic attainment (Booth et al 2014), during childhood and adolescence. Active play is a form of MVPA which is particularly likely to stimulate executive function (Tompson et al 2015). Executive function is an umbrella term which includes working memory, inhibition, planning, shifting, updating, attention, selection of efficient problem solving strategies etc. (Diamond, 2013). Executive functions are implicated in many areas of learning and academic achievement: mathematics, language, vocabulary, literacy, sentence reading, reading comprehension and science. Dalziell et al. (2015) evaluated the, 'Better Movers and Thinkers' (BMT) PE intervention, which is designed encourage children to move and think in an integrated way. The aim of this research was to determine if BMT improves academic skills (Dalziell et al., 2015). Dalziell et al. (2015) found significant improvement in some aspects of executive functioning. Interestingly, improvements were greater in boys. In a separate study by Barker et al. (2014), they found that children who participated in less structured PA had better executive functioning.

Finally, Becker et al. (2014) presented findings which suggested that pre-school children with higher levels of active outdoor play had improved self-regulation (interactions between the body, movement and cognition) which resulted in better academic performance in reading and mathematics.

2.5 FACILITATORS AND BARRIERS TO ACTIVE PLAY

Understanding the barriers and facilitators children face when participating in active play is vital in encouraging more children to participate in active play. Whitebread (2012) suggested that environmental and social factors are the two biggest influences on children's play. Safe places for children to play are limited in Scotland. The Scottish Household Survey (2015) noted that 91% of parents reported that their children had at least one outdoor place to play. However, many parents regard their community as unsafe for their children to play as only 64% reported that they think it is very or fairly safe for their children to play at a park with 2 or 3 friends (Scottish Household Survey, 2015). In one Australian study, 94% of 78 parents were concerned about their child's safety when playing without adult supervision, citing strangers as their greatest concern (Veitch et al., 2006). Interestingly, concern was greater in deprived areas compared to non-deprived areas (Veitch et al., 2006). Tremblay et al. (2015) argued that the danger of strangers was greater online than offline, and added that the likelihood of a child being abducted is 1 in 14 million in Canada; this figure is likely to be less when children play outside with friends.

Social factors, such as the influence of others can also have a positive impact on play. Perhaps one of the biggest influences of play prevalence is the presence of nearby friends (Whitebread, 2012). Veitch et al. (2006), reported that 40% of Australian parents stated that the absence of a nearby friend was detrimental to their child playing outdoors. Similar findings were also echoed by Brockman et al. (2011) who reported that children perceived play as participating with nearby friends. It appears that childhood friends are central to play prevalence, but parents also have a significant role to play as they can also increase their child's active play.

Fun and choice are also two components central to active play participation. The Aspen Institute (2015) presented data which suggested that 9 out of 10 kids said, 'fun' was the main reason for participating in sport and PA. This was also reinforced in Brockman's (2011) aforementioned qualitative study which examined children's motivators, barriers and facilitators to active play. The authors presented data which highlighted the importance of fun and choice in active play. One participant said, "I like playing stuff that's sort of like freely, so you don't have to play against a rule". Despite fun being a priority for children's PA participation, the absence of fun is often cited as the main reason for PA disengagement (Visek et al., 2015). Visek et al. (2015), who looked at the importance of fun in sport

highlighted that the benefits from playing sport can only be gained through regular participation, which is achieved through fun experiences for children. Active play can be a fun activity which is inclusive and instils intrinsic motivation to give children positive PA experiences before progressing onto sport (The Aspen Institute, 2015).

Studies have also presented findings which suggest the influence of an adult can have a positive impact on active play and MVPA levels in children. O'Dwyer et al. (2012) developed a family based active play intervention in the England. The programme combined an education component for parents and an active play session for both parent and children (O'Dwyer et al., 2012). O'Dwyer et al. (2012) presented positive results with children engaging in PA 4.5% and 13.1% more during the week and weekend days, respectively. Furthermore, Weaver et al. (2013) suggested that the presence of a teacher participating in PE with children increases their MVPA levels. Although, this particular study was specific to teacher's roles in PE, it may transfer to play and illustrate how significant others can increase children's activity levels during an active play session.

3.0 CONCLUSIONS

To conclude, levels of MVPA among Scottish children and adolescents are low, and these are not being sufficiently improved through typical domains of PA such as active transportation and sports participation. One emerging topic, which might provide useful for the promotion of MVPA, is active and outdoor play, though evidence on the prevalence of active play in the UK has been limited thus far.

Active and outdoor play is associated with higher levels of MVPA, in part because children can participate in it for prolonged periods, but additionally it is an activity in which children's experiences are at the centre. The characteristics of active play are that it is fun, inclusive and it gives children the choice, which may potentially be a better way of improving MVPA levels and FMS. Moreover, the aforementioned characteristics of active play align with the definition of physical literacy, which is thought to be imperative to improved PA levels and sports participation. Active play also has wider benefits beyond increasing PA levels, including improved academic attainment, confidence and motivation, all of which are imperative to developing a healthy child.

The presence of nearby friends and significant others can facilitate active play, but safety concerns are potentially limiting children's outdoor and active play. One potential

strategy for increasing children’s activity levels is to develop an active play intervention which is, in part facilitated by adults but stays true to the nature of active play by creating a fun, inclusive environment where children can make their own decisions. This may reduce concerns of parents about the safety of more traditional outdoor play which does not involve adults, increase activity levels in children and improve FMS, and ultimately lead to a happier and healthier childhood.

4.0 ACTIVE PLAY SURVEILLANCE IN SCOTLAND (see appendix two for full version)

Surveillance of Active and Outdoor Play in Scotland (Since 2010- only the most recent sources included here)					
Source, Sample and Frequency	Background & Methodology	Prevalence of Active/ Outdoor Play	Perceived Safety	Perceived Accessibility	Other Details and Comments
Mannion, Mattu and Wilson (2015).	School Reported	Measured	Not Measured	Not Measured	Survey of Nursery, Primary and Secondary schools. Not based on nationally representative sample.
Healthy Behaviours in School Children (2014).	Self-Reported	Measured	Measured	Measured	Adolescents only, age 11,13, and 15 years; Broadly nationally representative
Scottish Household Survey (2014).	Self and Parent Reported	Measured	Measured	Measured	Nationally representative
Scottish Health Survey, 2014 (Supplementary Tables- See child physical activity file 7)	Self and Parent Reported	Measured	Not Measured	Not Measured	Nationally representative
Growing up in Scotland (2014)	Self and Parent Reported	Measured	Measured	Measured	Survey of 7 year olds. Not based on nationally representative sample.
Active Healthy Kids Scotland Report Card (2013)	Secondary data source	Measured	Measured	Measured	Provides international comparisons via an international report card published every 2 years
Active Play (def): unstructured PA which takes place outdoors in a child’s free time (Veitch, et al., 2007). Active play requires the use of large muscle groups in activities such as running, catching or jumping which increase the heart rate to MVPA levels (BHF, 2015).					

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APPENDICES

Appendix One: Active Play Surveillance Table- Detailed Version

Surveillance of Active and Outdoor Play in Scotland (Since 2010- only the most recent sources included here)					
Source, Sample and Frequency	Background & Methodology	Prevalence of Active/ Outdoor Play	Perceived Safety	Perceived Accessibility	Other Details and Comments
Mannion, Mattu and Wilson (2015). Previous report published in 2007. Summarises provision of outdoor education in nursery (N=13), primary (N=26) and secondary (N=14) schools.	School Reported -Self-report data can be inaccurate as it tends to be over-reported. Objective measurements more valid. Survey completed by teachers.	1) Percentage of day spent outdoors in pre-school -children spend 36% of their time at nursery outdoors. 2) Total outdoor learning, minutes per pupil per week in primary schools. -Primary children spend 30 mins per pupil/per week outdoors. 3) Total outdoor learning, minutes per pupil per week in secondary schools. - Secondary school children spend 30 mins per week/per pupil outdoors.	Not Measured	Not Measured	Excludes data on PE and break times
Healthy Behaviours in School Children (2014). Survey has been conducted every 4 years since	-Self Reported measures of: <ul style="list-style-type: none"> • Frequency of active and outdoor play • Perceived Safety • Perceived accessibility 	1) How often do you use your local greenspace in the summertime? -15% of 13-15y olds used outdoor greenspace less than once a month; 19% use it 1-3 times/month; 64% were weekly users. 68% of 13 year olds and 61% of 15 year olds were weekly users;	1) Do you feel safe in your local area? -59% always feel safe in their local area (60% of boys and 57% of girls), 30% feel safe most of the time (29% of boys, 31% of girls). Decline in the % of girls who always feel safe in their local	1) Perceptions of Local Area? -59% felt there are good places to spend their free time locally, with no gender differences though % of boys and girls who	Only 13 and 15 year olds were asked about their local greenspace and local area

<p>1990. A nationally representative sample of over 10,800 pupils aged 11,13,15 years participated in the survey. The survey was conducted in schools, using the class as the sampling unit, with all the pupils in selected classes being asked to complete the questionnaire in the classroom during one school period.</p>	<p>-Self-report data can be inaccurate as it tends to be over-reported. Objective measurements more valid.</p> <p>Questions on perceptions of neighbourhood environment and use of local greenspace, pupils were asked about frequency and duration of local greenspace use in the summertime (i.e. not in the past week/4 weeks etc), questionnaires were administered between March and June, most questionnaires were returned by the end of May, thus some participants will have reported their behaviour from the previous year.</p> <p>Inequalities were not explored.</p>	<p>69% of boys and 66% of girls at age 13 were weekly users of local greenspace compared to 65% of boys and 56% of girls at age 15 years.</p> <p>2) How many hours a week do they spend in their local greenspace during summertime?</p> <p>-22% (non/light users), 24% (moderate users) and 54% (heavy users), %s decline with age and gender differences 7% of 13 year olds were heavy users compared to 51% of 15 year olds. No gender difference at age 13, but at age 15, girls were less likely than boys to be heavy users (46% compared with 56%) and more likely to be moderate users (27% compared with 21%, respectively).</p>	<p>area from 61% at age 13 to 52% at age 15, while there is little age difference for boys (62% at age 13 and 58% at age 15).</p> <p>-80% felt it was safe for children to play outside. Decline in the % of boys who felt it was safe for children to play outside from 84% at age 13 to 75% at age 15. Decline was smaller in girls (82% at age 13 and 79% at age 15).</p> <p>-66% felt they could trust people in their local area (67% of boys, 64% of girls). Higher at age 13 (71%) than age 15 (63%) for boys, but not girls (66% at age 13 vs 62% at age 15).</p>	<p>felt there are good places to spend their free time locally declined with age. 65% of boys and 64% of girls at age 13 years, 53% of boys and 53% of girls at age 15 years.</p>	<p>Wide coverage of multiple play related issues, but for adolescents only.</p>
<p>Scottish Household Survey (2015).</p> <p>The SHS is an annual survey which was first conducted in 1999. A nationally representative</p>	<p>-Self and Parent Reported measures of;</p> <ul style="list-style-type: none"> types of play areas available for children to play in perceptions of adults on how safe it is for children to play in local areas 	<p>1) Activities young people aged 8 to 21 take part in?</p> <p>-19% in 'other outdoor activities' (aggregated 8-21y data)</p>	<p>1) Do you think it's safe for children to walk or cycle to play area on their own?</p> <p>-Yes 42% agreed to wooded environment, 57% agreed to park and 62% agreed to playground. Figures typically lower in more deprived areas. However, slightly</p>	<p>1) Opportunities for children to play?</p> <p>- (6-12y olds) 91% had access to play areas within their neighbourhood; 65 per cent have access to a park, 58% have access to a playground and 55% have access to a field or other</p>	

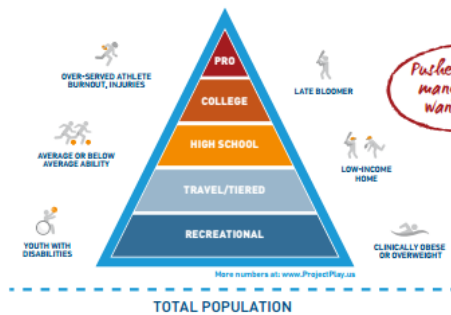
<p>sample of approximately 11,000 households. The survey was completed by the 'highest income householder' through an online interview. NOTE, questions regarding play are asked bi-annually and only if there is a child aged 6-12 years.</p>	<ul style="list-style-type: none"> types of activities young people engage in within their local area. <p>-Self-report data can be inaccurate as it tends to be over-reported. Objective measurements more valid.</p> <p>Relatively small sub-sample group (number not actually given)</p>		<p>higher when with friends; for park (64%) and playground (67%).</p> <p>2) Percentage of households that think it is very or fairly safe for children to walk or cycle to play areas on their own?</p> <p>-58% playground, 55% park, 37% natural/wooded. (lower in more deprived)</p> <p>3) Percentage of households that think it is very or fairly safe for children to go to play areas with 2 or 3 friends? (by Urban Rural Classification and SIMD)</p> <p>-64% playground, 62% park, 42% natural/wooded environment.</p> <p>4) What is the youngest age at which parents would feel it was safe for their children to play outside without supervision?</p> <p>- ranged between 9-11y depending on the location (lowest in wooded environments).</p> <p>5) Percentage of households who are very or fairly concerned of children being harmed by adults in play areas</p>	<p>open space. Slightly worse in the more deprived areas, for example; 28% say there is a natural environment or wooded area in their neighbourhood, compared to 51 per cent non deprived areas</p>	
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			-36% playground, 40% park, 55% natural/wooded environment.		
<p>Scottish Health Survey, 2014 (Supplementary Tables- See child physical activity file 7)</p> <p>Annual survey which has a nationally representative sample – in 2014 had 3011 households (555 with children).</p>	<p>-Self and Parent Reported Measures of;</p> <ul style="list-style-type: none"> • Frequency of active play <p>-Self-report data can be inaccurate as it tends to be over-reported. Objective measurements more valid.</p>	<p>1) Children participating in active play for 30+mins.</p> <p>-5 or more times/week: Age 2-4 years (81%), 5-7 years(74%), 8-10 years (67%), 11-12 years (54%), 13-15 years (31%), For the entire sample=63%)</p>	Not Measured	Not Measured	<p>Active Play includes the following activities; Ride a bike, kick a ball around, run about (outdoors or indoors), play active games.</p> <p>The Scottish health survey accepts data at any intensity.</p>
<p>Growing up in Scotland (2014)</p> <p>Sweep 7 of GUS first birth cohort collected data from the child and his/her “main carer” during 2012/13 when the child was seven years 10 months old. The sample consisted of 3279 families where both child and mother had completed the</p>	<p>Parent and child self-reported measures of;</p> <ul style="list-style-type: none"> • Frequency of active play <p>-Self-report data can be inaccurate as it tends to be over-reported. Objective measurements more valid.</p>	<p>1) How long does your child spend in active play?</p> <p>-Weekend: Less than 1 hour (3%) 1-2 hrs (5%) 2-4 hrs (23%) 4-6 hrs (24%) >6 hrs (45%)</p>	Not Measured	Not Measured	

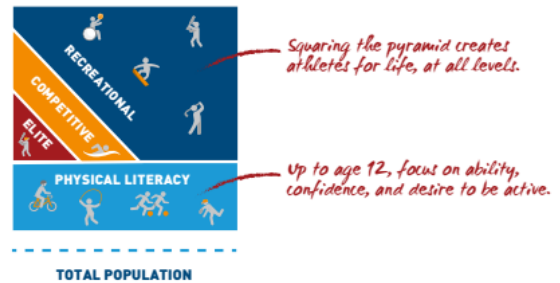
relevant questionnaires.					
Active Healthy Kids Scotland Report Card (2013)	Secondary data source: critiques the primary data sources available on active & outdoor play participation, accessibility, safety, policy	Critiques and synthesises the evidence above, and attempts to grade this on an A-F scale	Critiques and synthesises the evidence above, and attempts to grade this on an A-F scale	Critiques and synthesises the evidence above, and attempts to grade this on an A-F scale	Provides international comparisons via an international report card published every 2 years (15 countries in 2014; 40 countries in 2016)
Active Play (def): unstructured PA which takes place outdoors in a child's free time (Veitch, et al., 2007). Active play requires the use of large muscle groups in activities such as running, catching or jumping which increase the heart rate to MVPA levels (BHF, 2015).					

Appendix Two: (The Aspen Institute, 2015):

TODAY'S BROKEN MODEL
PYRAMID DOES NOT MAKE ROOM FOR ALL CHILDREN



SPORT FOR ALL, PLAY FOR LIFE MODEL
BROAD ACCESS LEADS TO SUSTAINED PARTICIPATION



USEFUL LINKS

1. The Aspen Institute: Sport for All, Play for Life;
<http://aspenprojectplay.org/sites/default/files/Aspen%20Institute%20Project%20Play%20Report.pdf>
2. Inspiring Scotland, Go2Play: About Active Play;
<http://www.inspiringscotland.org.uk/media/43270/15-08-05-About-Active-Play-Book-Final.pdf>
3. Inspiring Scotland, Go2Play: Delivering Active Play;
<http://www.inspiringscotland.org.uk/media/43273/Active-Play-Delivery-Book-final.pdf>
4. ParticipACTION, Keeping Kids Indoors;
<http://www.participaction.com/wp-content/uploads/2015/03/2015-Report-Card-Highlight-Report-EN-FINAL.pdf>
5. Play Strategy for Scotland, Our Action Plan;
<http://www.gov.scot/resource/0043/00437132.pdf>
6. Play Strategy for Scotland, Our Vision;
<http://www.gov.scot/resource/0042/00425722.pdf>
7. BHF National Centre, The Best Start in Life;
[file:///C:/Users/avril/Downloads/beststart%20\(4\).pdf](file:///C:/Users/avril/Downloads/beststart%20(4).pdf)