



Child's Play

Findings from the Western Australian 'PLAY Spaces and Environments for Children's Physical Activity' Study (PLAYCE)

PLAYCE

 THE UNIVERSITY OF
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AUSTRALIA

Acknowledgements

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Funding



Collaborating institutions and partners





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The PLAYCE Study: Supportive Childcare Environments for Physical Activity in the Early Years

Physical activity, such as active play, has many health benefits for young children including developing healthier bones, maintaining a healthy weight, and improved cognitive and social development.

Early Childhood Education and Care (ECEC) services are an important place for physical activity promotion as many Western Australian children aged 2-5 years attend an ECEC service. Past research has shown that the ECEC service attended can affect how much physical activity pre-schoolers do.

The aim of this research was to provide information on how physically active WA pre-schoolers are on average and whilst attending ECEC. The research also sought to understand the influence of the ECEC physical and policy environment and educator practices on pre-schooler physical activity levels.

The PLAYCE study investigated a range of features, including indoor and outdoor space, play equipment, and natural features of the environment as well as educator physical activity practices to determine which have the most influence on children's physical activity whilst attending ECEC.

The research team is working with the ECEC sector to develop a checklist to assist services meet the National Quality Framework for Early Childhood Education and Care 'Physical Environment' standards. The checklist will assist services to identify what they can do to improve the quality of their physical environment to better support children's physical activity, health and development.



PLAYCE Study design

The PLAYCE sampling protocol ensured that an equal proportion of low, medium and high socio-economic status (SES) centres were represented in the study. The study also sampled from very large and small centres to ensure that there was maximum variation in the environments of the centres taking part. The study commenced in 2015 with data collection from September 2015 to April 2018. Data collection involved several components, including:

- ECEC centre staff surveys;
- Parent surveys;
- Environmental audit of the physical space and facilities of the ECEC centre, including policy audit;
- Accelerometers ('superhero' belts) worn by children to measure physical activity duration and intensity;
- Radio Frequency Identification (RFID) ('superhero' watches') worn by children to measure movement when indoors;
- Global Positioning Devices (GPS) to determine the general places where physical activity occurs when children are outside.

Participation and demographics

Overall, 104 ECEC services and 1596 children and their families in the Perth metropolitan area took part in the PLAYCE study. Just under half (46%) of all services invited consented to participate. The study ensured there was variation across both size and SES of ECEC services. Table 1 shows the characteristics of the participating children and parents. Children were grouped into toddlers (2<3 years) and pre-schoolers (3≤5 years).

Table 1: PLAYCE study demographics

(n=1596)	n	%
Gender		
Boys	849	53.2
Girls	747	46.8
Age grouping*		
Toddler (2<3 years)	538	35.6
Preschool (3≤5 years)	973	64.4
Parent Education		
Year 12 or lower	240	15.7
Trade or Diploma	417	27.3
University or Post-graduate	871	57.0

Unweighted data presented

*Ages in each grouping are based on the 24-hr Movement Guidelines for the Early Years

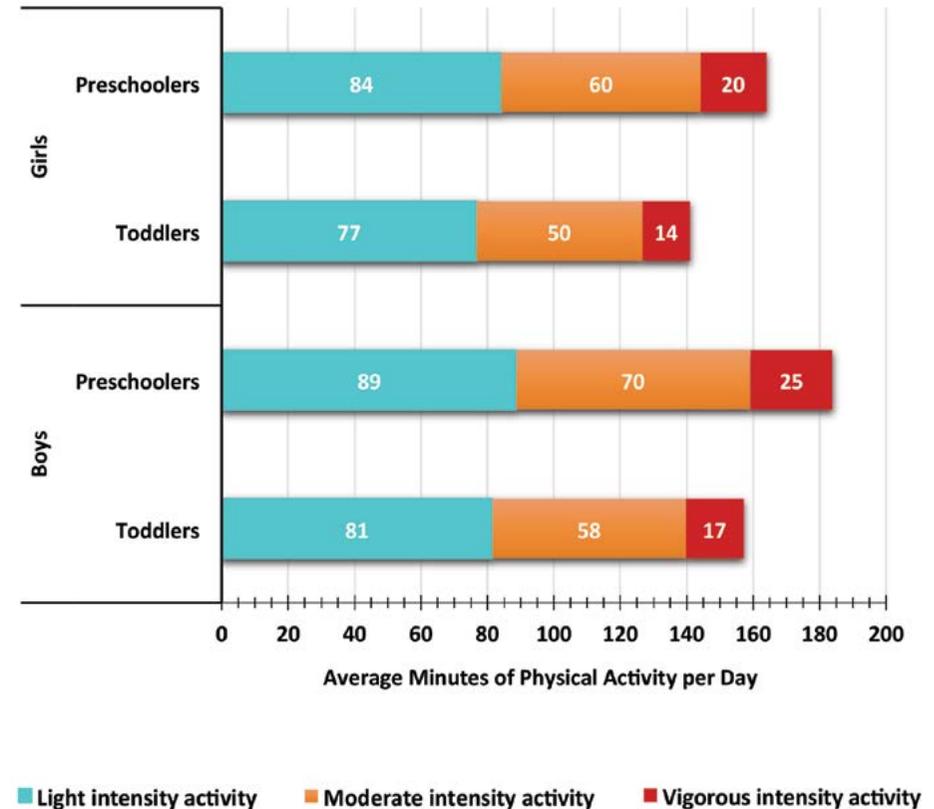
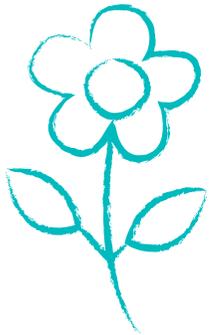
Physical activity levels of young children

How active are children 2-5 years?

Pre-school children (3≤5 years) did on average 174 minutes of physical activity per day and toddlers did on average 150 minutes of physical activity per day.

Overall, boys did more physical activity per day than girls (pre-school boys = 20 minutes more: toddler boys = 16 minutes more).

Pre-school children (3≤5 years) did on average 87 minutes of 'energetic play' per day. Energetic play was defined as moderate-vigorous intensity physical activity.

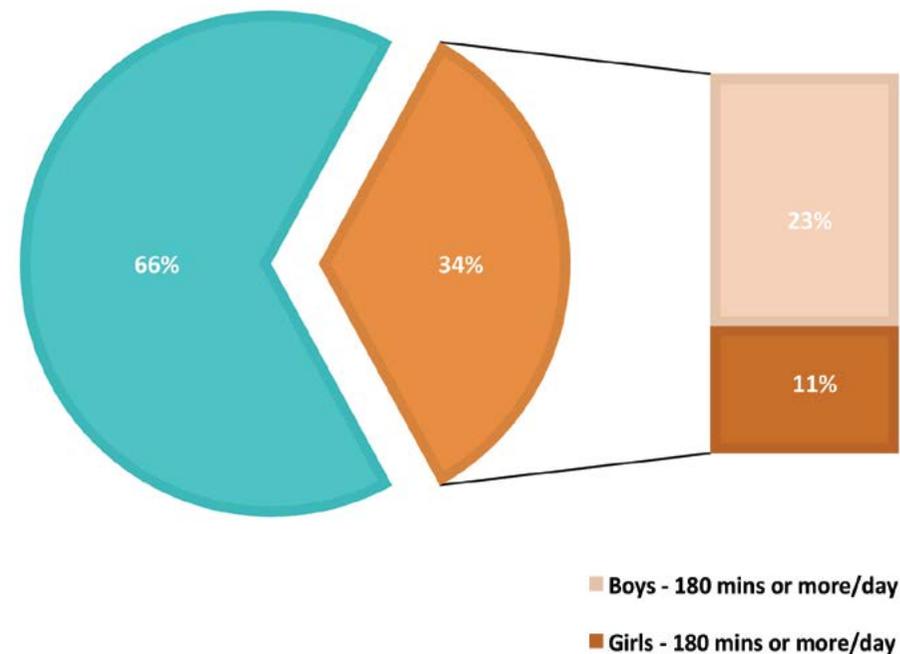


Are children meeting the Physical Activity Guidelines for the Early Years?

Physical activity was objectively measured using accelerometers worn by children over 7 days.

34% of children 2-5 years met the recommended 180 minutes (three hours) of physical activity per day. Approximately 12% of female toddlers (2<3 years) and 29% of female pre-schoolers (3≤5 years) met the Physical Activity Guidelines, compared with 25% of male toddlers and 55% of male pre-schoolers.

87% of pre-school children (3≤5 years) achieved the recommended 60 minutes of 'energetic play' per day.



At least **180 MINUTES** spent in a variety of physical activities, including energetic play (with at least 60 minutes for pre-schoolers), **SPREAD THROUGHOUT THE DAY** – more is better.¹

Australian 24 Hour Movement Guidelines for the Early Years

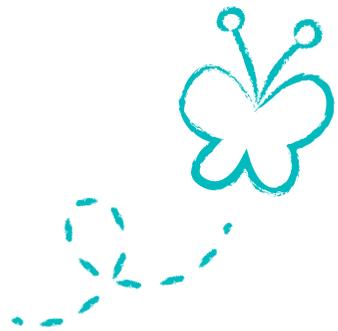
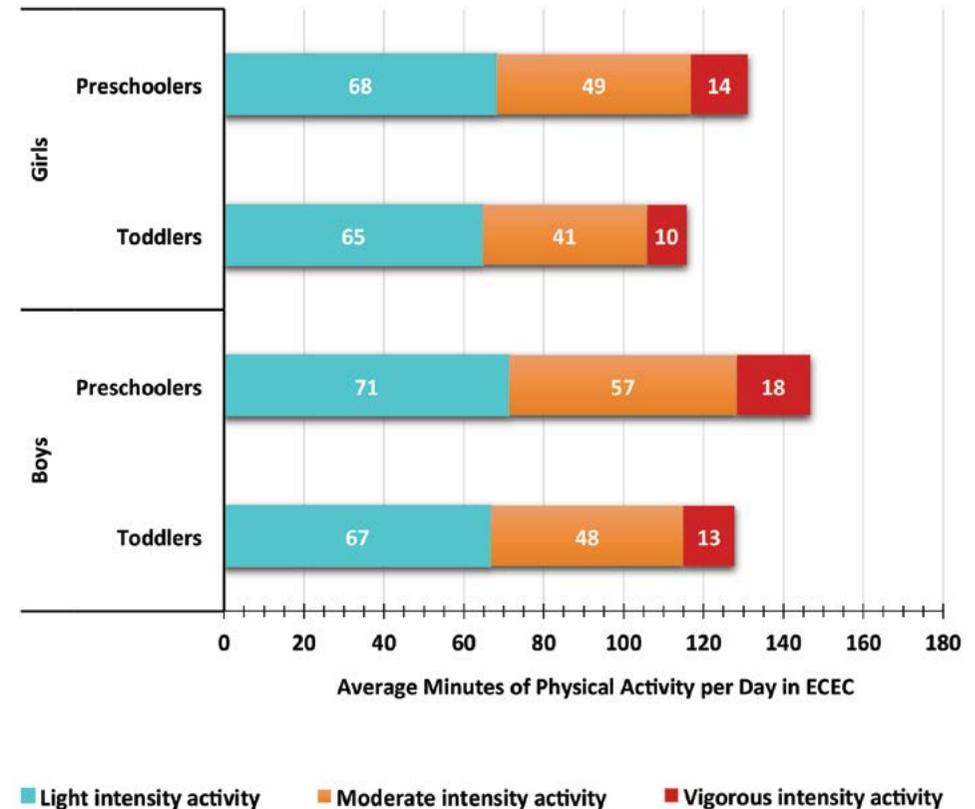
Physical activity levels of young children while at ECEC

How active are children 2-5 years while at ECEC?

Pre-school children (3≤5 years) did on average 139 minutes of physical activity and toddlers did on average 123 minutes of physical activity over a standard 8-hour day at ECEC.

Overall, boys did more physical activity per day at ECEC than girls (pre-school boys = 16 minutes more; toddler boys = 12 minutes more).

Pre-school children (3≤5 years) did on average 69 minutes of 'energetic play' per day, based on a standard 8-hour day at ECEC.

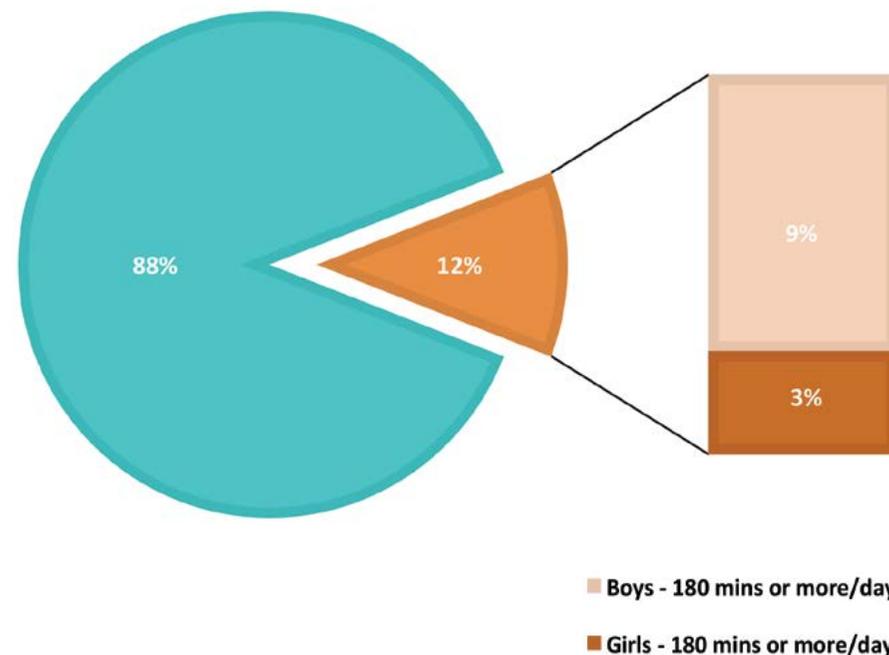


Are children meeting the Physical Activity Guidelines for the Early Years while at ECEC?

The Australian Physical Activity Guidelines for the Early Years apply to when children are attending ECEC. Less than 12% of children aged 2-5 years met the recommended three hours of physical activity per day whilst attending ECEC.

The proportion of boys meeting the Physical Activity Guidelines at ECEC was 2.5 times that of girls (8.6% vs. 3.2%). Across toddlers and pre-schoolers a greater proportion of boys than girls achieved the Physical Activity Guidelines whilst attending ECEC.

60% of pre-school children (3≤5 years) achieved the recommended 60 minutes of 'energetic play' per day, based on a standard 8-hour day at ECEC.



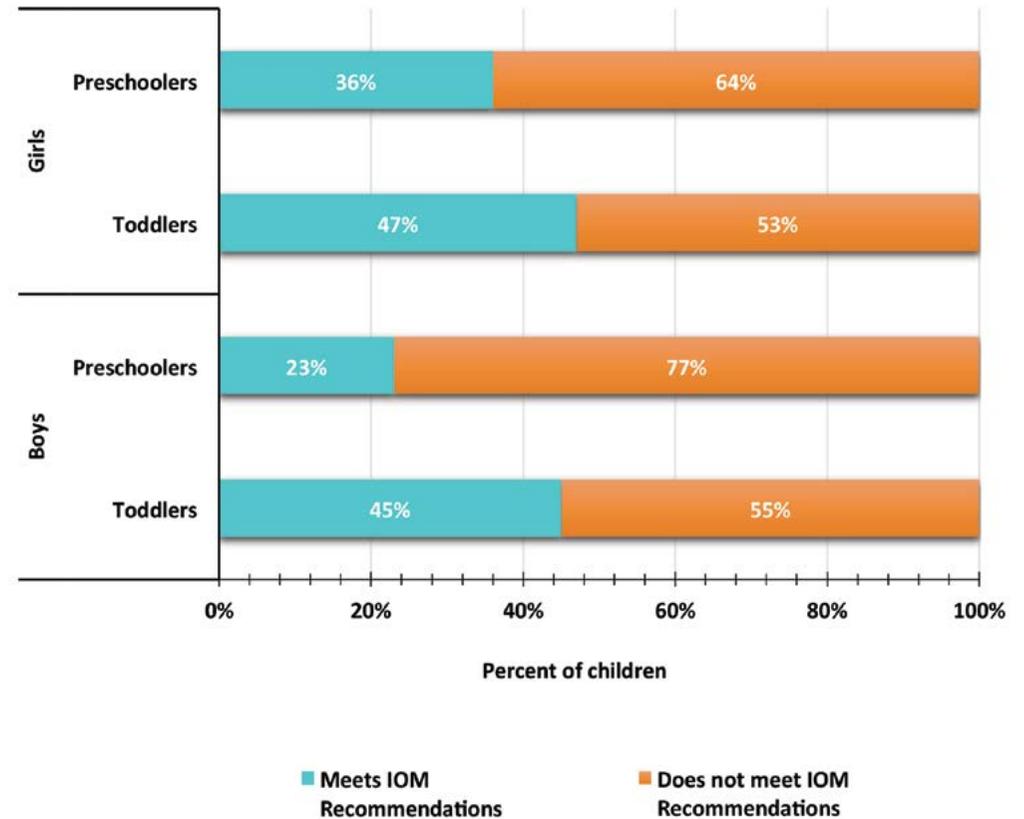
At least **180 MINUTES** spent in a variety of physical activities, including energetic play (with at least 60 minutes for pre-schoolers), **SPREAD THROUGHOUT THE DAY** – more is better.¹

Australian 24 Hour Movement Guidelines for the Early Years

Children's physical activity level per hour of attendance at ECEC

The US Institute of Medicine (2011) recommends that children 2-5 years be provided opportunities to participate in 15 minutes of physical activity per hour, while in the ECEC setting (Recommendation 3.1).

Less than 64% of children in the PLAYCE study did 15 minutes of physical activity per hour at ECEC. By age group, 52% of toddlers and 70% of preschoolers did 15 minutes of physical activity per hour at ECEC. Of those children who did achieve 15 minutes of physical activity per hour at ECEC, 57% were male.

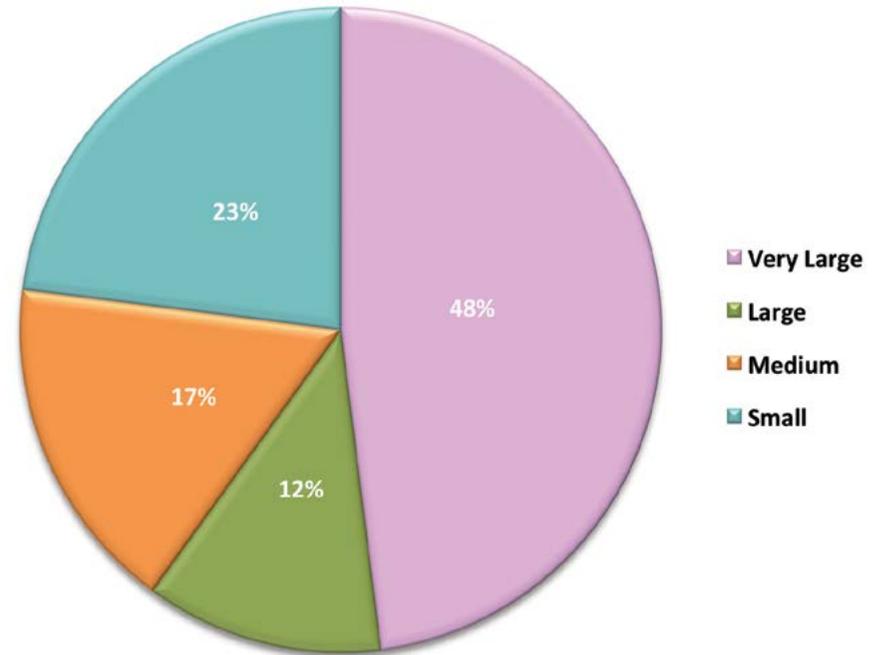


About the ECEC services

Socio-economic status and size of PLAYCE centres

Centres were categorised into 'small', 'medium', 'large' and 'very large' based on the number of children enrolled. Centres were also classified into low, middle and high socio-economic status based on the socio-economic status (SEIFA score) of the suburb where the centre was located.

The majority of participating centres were 'very large (48%), and one-quarter of centres were categorised as 'small'. There was a slightly higher proportion of low SES centres (41%), 33% were middle SES centres and 26% high SES centres.



Physical environment characteristics of ECEC services

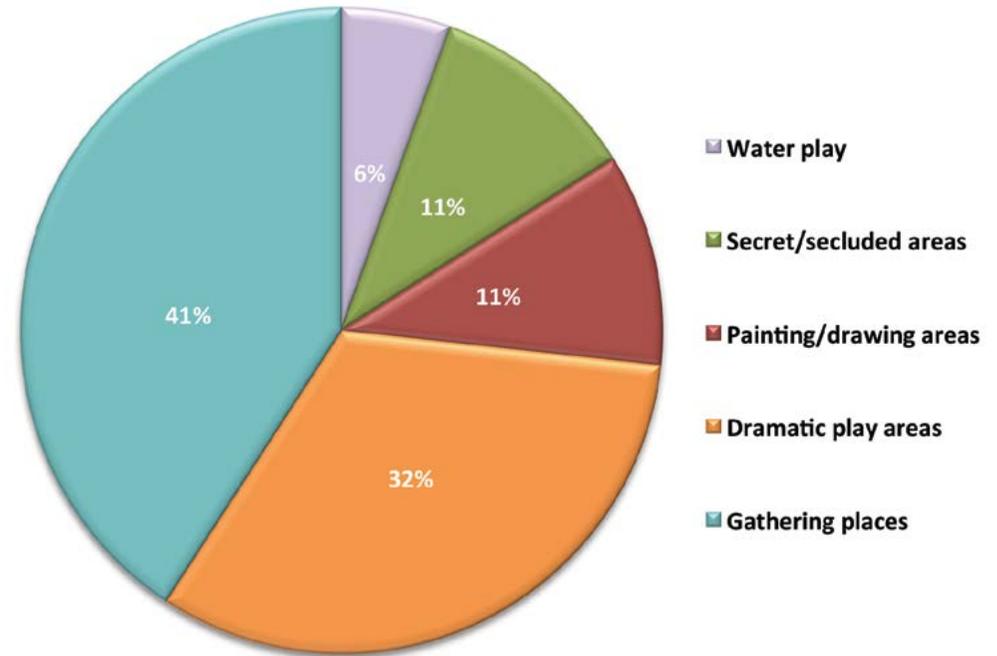
Outdoor play spaces

The types of different play spaces (dramatic play areas, gathering places, painting/drawing areas, secret/secluded areas, water play) available to children in centre outdoor areas were audited.

On average, centres had seven separate play spaces per outdoor area (range 1-23).

Overall, 59% of centres had at least three different types of outdoor play spaces.

Gathering places and dramatic play areas were the most common outdoor play spaces available to children.



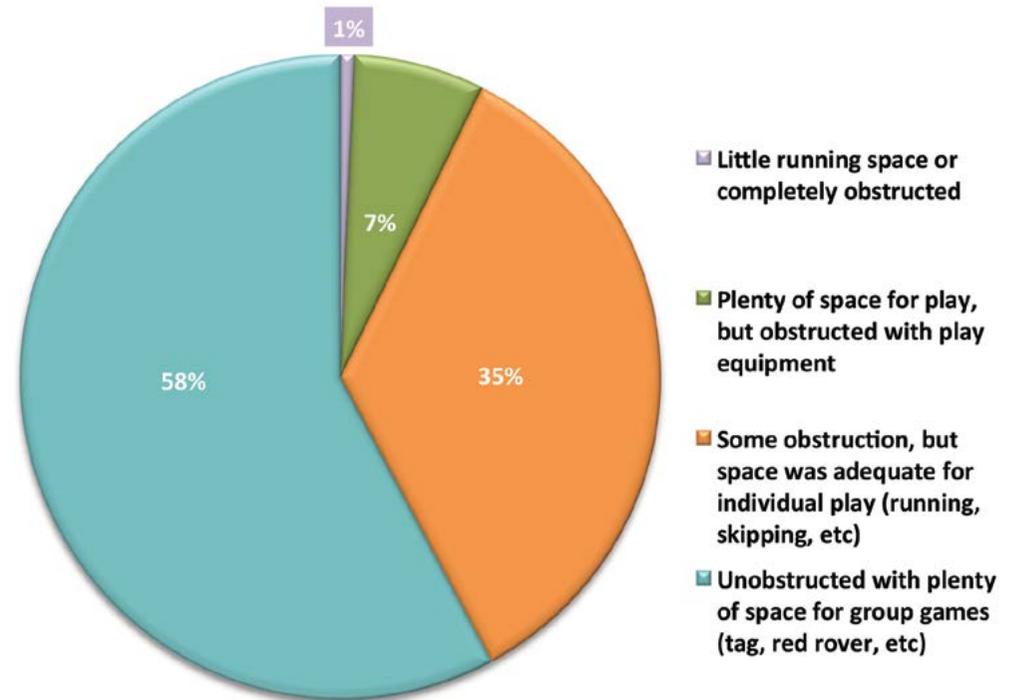
Outdoor running space

The level of obstruction in the running spaces available to children in centre outdoor areas was audited.

'Very large' centres accounted for 57% of centres with 'unobstructed' running space, and 'small' and 'medium' centres accounted for 77% of centres with 'some obstruction'.

Overall, 66% of low SES and 58% of high SES centres had 'unobstructed' outdoor running space, while 42% of middle SES centres had 'some obstruction'.

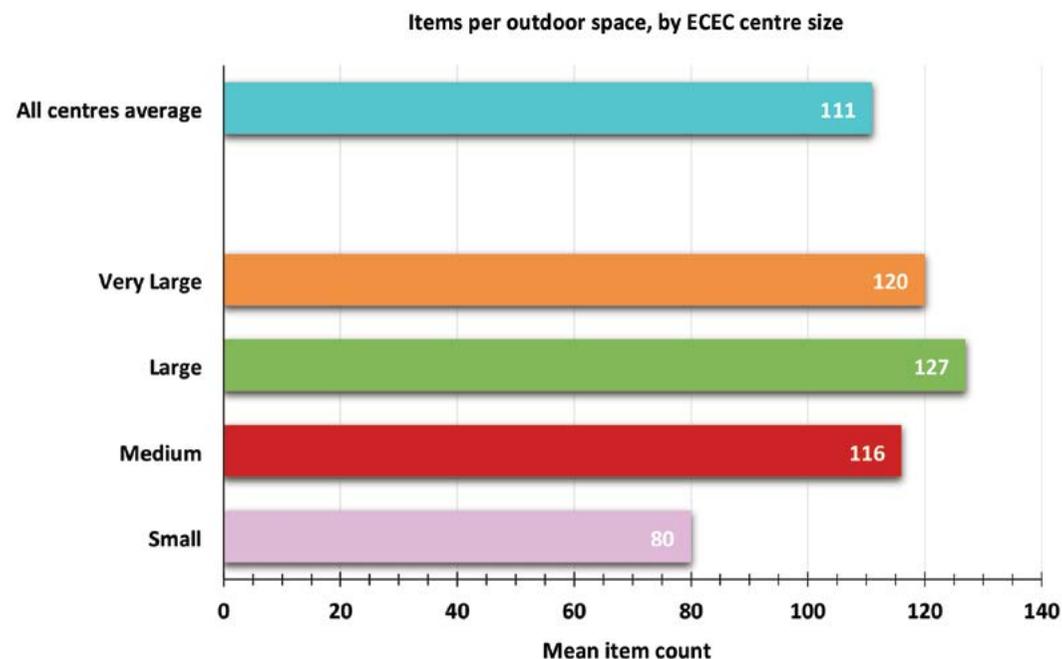
8% of centres had little running space or it was obstructed making it difficult for individual and group running based play.



Outdoor physical activity equipment

The physical environment audit included a count of the types of play equipment available to children in OUTDOOR areas (e.g. swinging and climbing equipment, slides, hoops & ball equipment, ground markings, sand/mud pit, push/pull toys, ride-on toys, water pump, cubby house, trampolines).

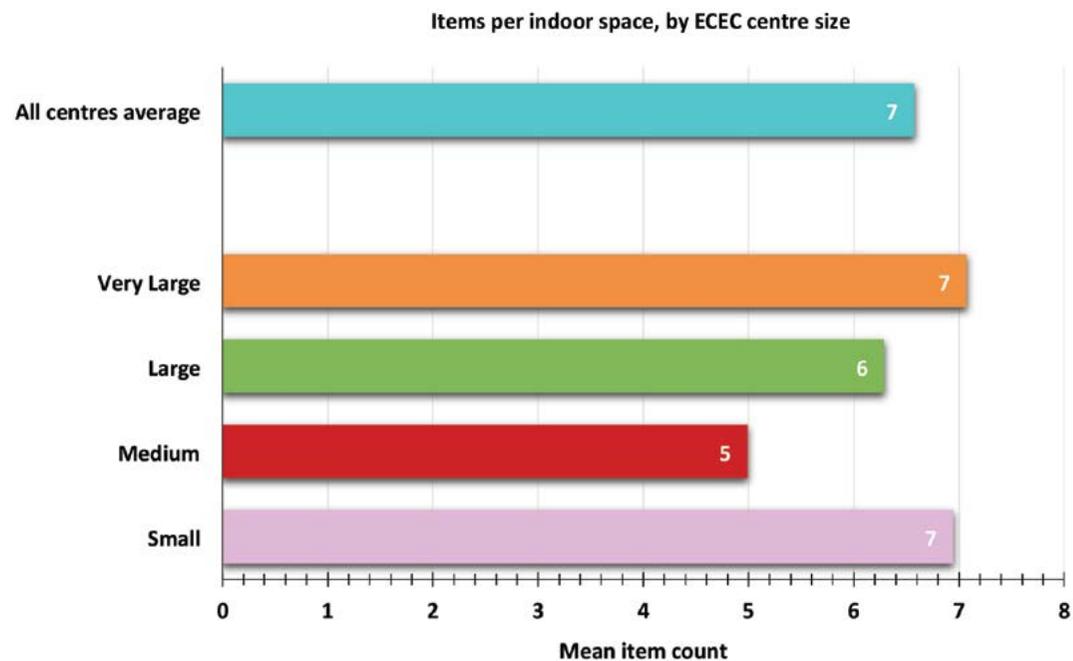
There was a wide range of outdoor physical activity equipment in centres, with most having climbing equipment, ride-on toys, sand pits and sand play equipment. Very few centres had ground markings, water pumps, trampolines or parachutes. Over 93% of centres had fixed and portable outdoor play equipment in 'good' or 'excellent' condition.



Indoor physical activity equipment

The physical environment audit included a count of the types of play equipment available to children in INDOOR areas (e.g. hoops & ball equipment, ground markings, balancing surfaces, floor mats, musical equipment, push/pull toys, mini-trampolines).

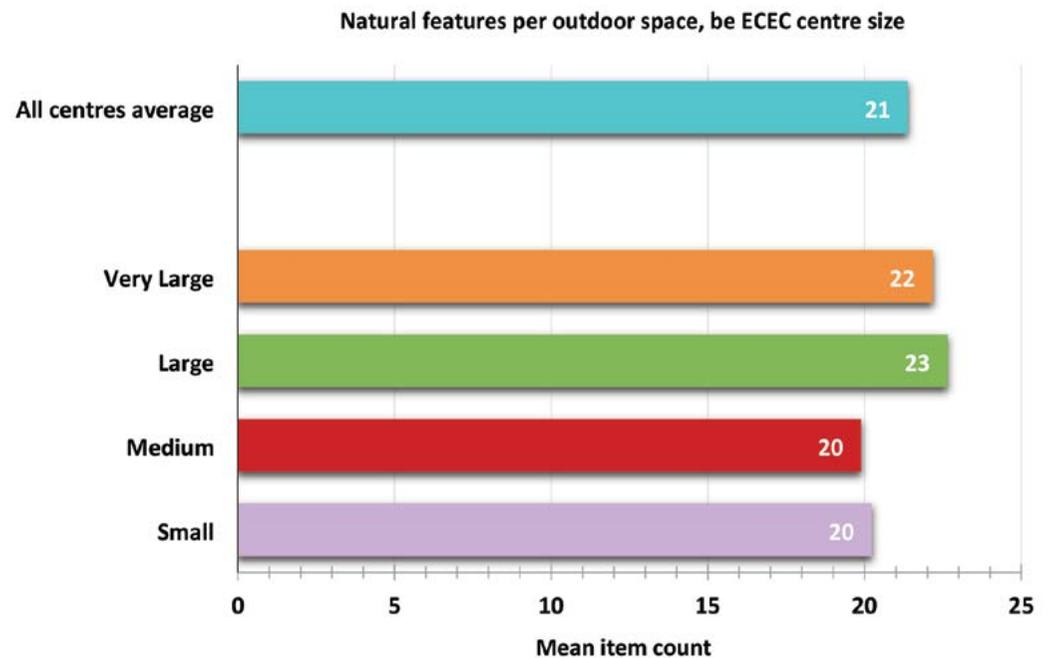
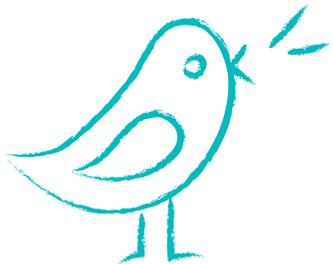
The most common types of indoor equipment were push/pull toys, floor mats, and musical equipment. The majority of centres did not have any fixed (95%) or portable (48%) indoor play equipment, but for most of those that did, the equipment was in a 'good' or 'excellent' condition.



Natural physical features

The audit included a count of the types of natural physical features available to children in outdoor areas (e.g. trees, plants, vegetable/fruit/herb gardens, grassed areas, different play area surfaces, water play areas, sloping ground).

While over 93% of centres had open areas for play and 75% had a variety of ground surfaces, only around one-quarter had water play areas or play areas built at different levels. Artificial grass was present in 67% of centres and many had no mature trees (36%), shrubs/bushes (35%), potted plants (49%), flower beds (64%) and/or edible gardens (44%).

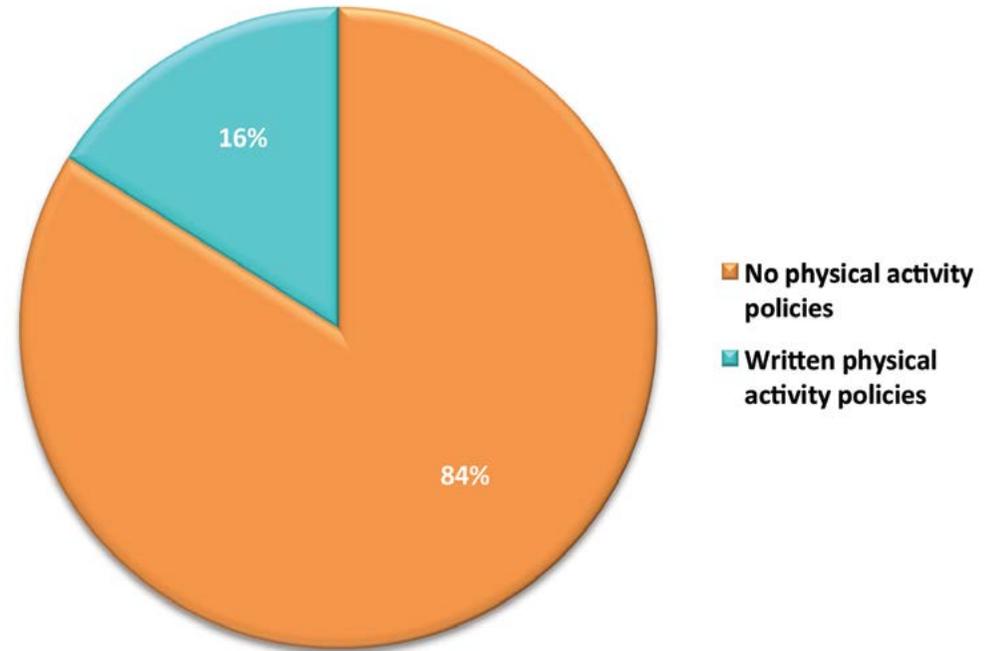


Centre physical activity policy

Physical activity policy

The policy audit identified if there was a formal written physical activity policy present in ECEC centres. Overall, 16% of centres had a physical activity policy.

Where a physical activity policy existed it generally covered the topics of limiting long periods of sitting for children, educator practices to encourage physical activity, shoes and clothing to allow participation in physical activity, and planned and informal physical activities.

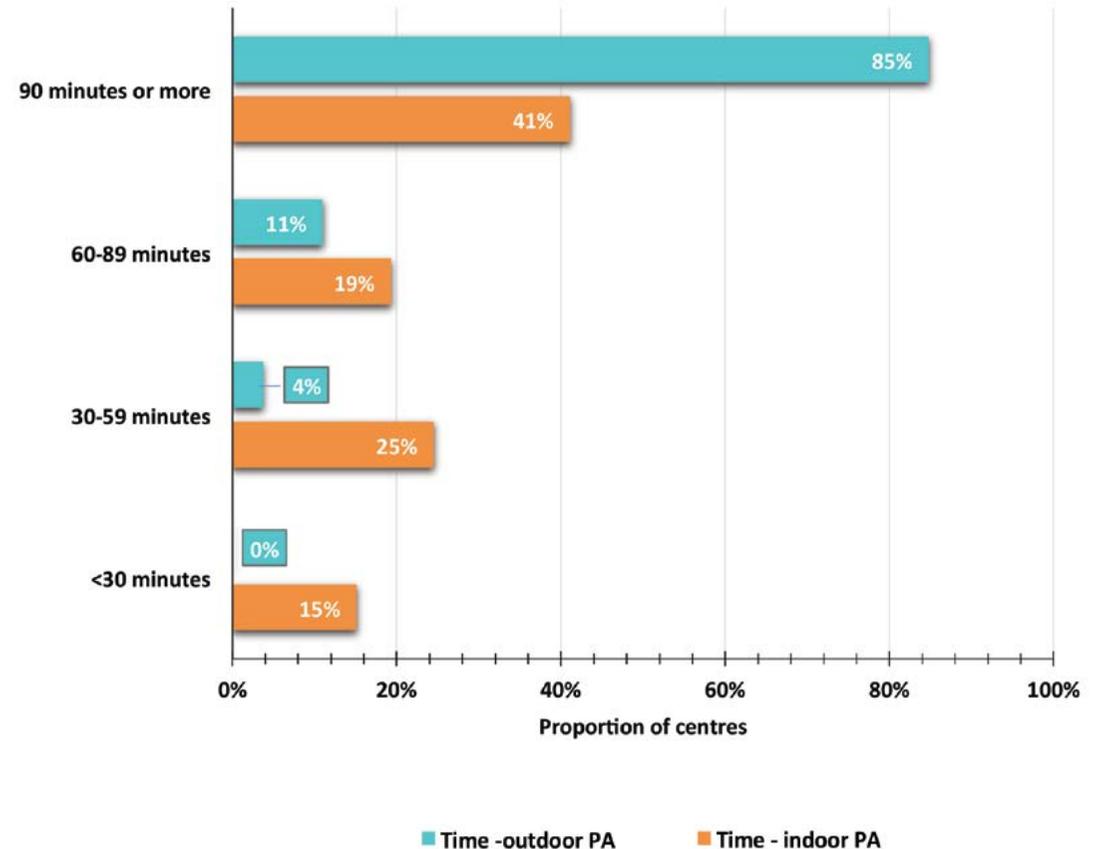


Centre physical activity practices

Educator-reported time for indoor and outdoor physical activity per day

Educators reported the amount of time allocated at their centre for both indoor and outdoor physical activity per day. The provision of 90 minutes or more of time for INDOOR physical activity per day was reported in only 41% of centres, while the majority of centres made provision for 90 minutes or more of OUTDOOR physical activity per day (85%).

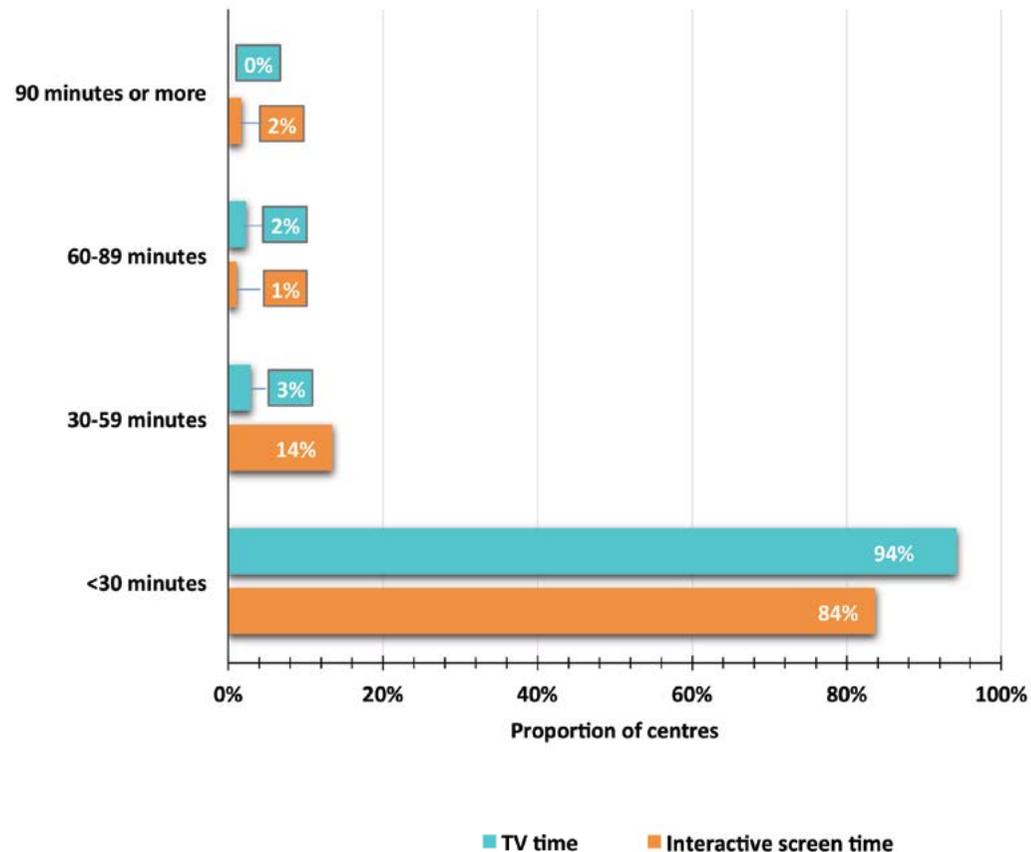
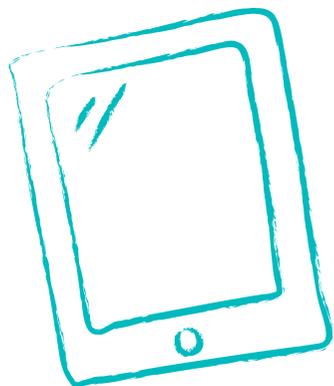
Only 37% of centres allocated enough time for daily physical activity (both indoors and outdoors) that would allow children to meet the recommended 180 minutes of physical activity per day.



Educator-reported time for TV and screen activities per day

Educators reported the amount of daily time allocated at their centre for TV and other interactive screen time (iPads, computer, games, etc).

The majority of centres restricted these types of sedentary activities to less than thirty minutes per day, however 15% of centres provided between 30-59 minutes of interactive screen time per day. Around 20% of centres 'rarely or never' offered alternatives to screen time.

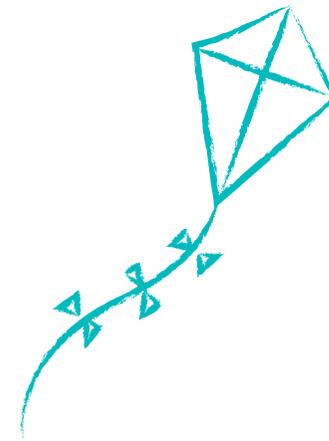


Summary



At least **180 MINUTES** spent in a variety of physical activities, including energetic play (with at least 60 minutes for pre-schoolers), **SPREAD THROUGHOUT THE DAY** – more is better.¹

Australian 24 Hour Movement Guidelines for the Early Years



- Around one-third of children 2-5 years met the recommended three hours of physical activity per day, and 87% of pre-schoolers met the recommended one hour of 'energetic play' per day.
- On average, toddlers did 150 minutes (2hrs 30mins) of physical activity per day, and pre-schoolers did 174 minutes (2hrs 54mins) per day.
- Boys did more physical activity than girls, with twice as many boys than girls meeting the daily physical activity recommendations, and boys completing an average of 20 minutes more physical activity per day than girls.

Children's Physical Activity in Early Childhood Education and Care

- Based on an average 8-hr day at ECEC, less than 12% of children 2-5 years met the recommended three hours of physical activity per day, and 60% of pre-schoolers met the recommended 60 minutes of 'energetic play' per day.
- Based on an average 8-hr day at ECEC, toddlers did 123 minutes (2hr 3mins) of physical activity per day, and pre-schoolers did 139 minutes (2hrs 19mins) per day.
- The US Institute of Medicine recommends children 2-5 years be provided opportunities for 15 minutes of physical activity per hour, whilst attending ECEC. Less than 64% of children were physically active for 15 minutes per hour of ECEC attendance.



The ECEC Physical and Policy Environment and Educator Physical Activity Practices

Physical environment

- 59% of ECEC centres had at least three different types of outdoor play spaces (spaces for dramatic play, cubby house, kitchen), gathering places (bench, chairs), painting and drawing areas, secret/secluded areas, and water play areas.
- The majority (57%) of 'very large' centres had unobstructed outdoor running spaces with room for group games, while 77% of 'small' and 'medium' centres had some obstruction.
- The majority of low and high SES centres had unobstructed outdoor running space, while 42% of middle SES centres had some obstruction, but adequate space for individual play.
- Most ECEC centres had a wide range of outdoor play equipment, which was in good or excellent condition.
- Most ECEC centres did not have any fixed or portable indoor play equipment.
- Two-thirds of centres had artificial grass, and around 36% did not have a mature tree and/or shrub. Almost half of centres had no potted plants or edible gardens, and two thirds of centres did not have any garden beds.

Policy environment

- Only 16% of centres had a written physical activity policy.

Educator practices

- Just over a third of centres allocated enough time for daily physical activity that would allow children to meet the recommended 180 minutes of physical activity per day.
- Most (85%) centres restricted screen based sedentary activities to less than thirty minutes per day. 15% of centres provided 30-59 minutes of interactive screen time per day.

Project team

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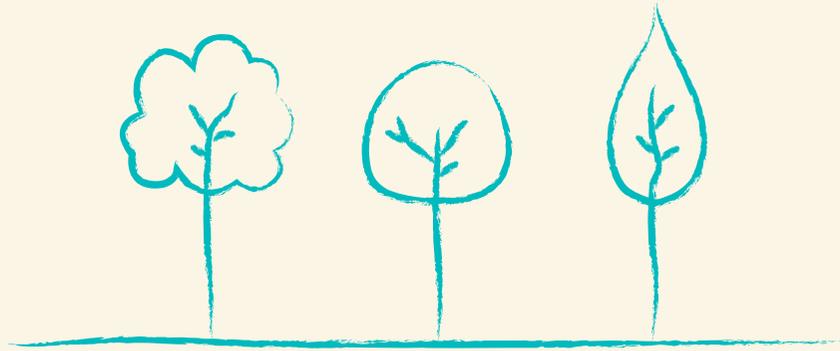
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- ¹ *National Physical Activity and Sedentary Behaviour, and Sleep Recommendations for Children (Birth to 5 years)*, Australian Government Department of Health (2017). Retrieved 12/01/2018, from <http://www.health.gov.au/internet/main/publishing.nsf/Content/health-publth-strateg-phys-act-guidelines#npa05>
- ² *Early Childhood Obesity Prevention Policies Goals, Recommendations, and Potential Actions*, Institute of Medicine of the National Academies (2011). Retrieved 31/08/2017, from www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2011/Early-Childhood-Obesity-Prevention-Policies/Young%20Child%20Obesity%202011%20Recommendations.pdf



To find out more:

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www.sph.uwa.edu.au/research/playce



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