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Master of Science in Health Sciences

*“Children’s play preferences and risky outdoor play in the childcare centre”*

**MASTERTHESIS**

Submitted by

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## **Preface**

This master thesis incorporates two parts. The first part comprises a qualitative study about preschool children's activity preferences conducted at Griffith University in Gold Coast during the time of my research internship from September 2017 till February 2018. The study was initiated by Nicola Wiseman as a part of her dissertation about 'Individual and contextual factors shaping children's understanding of lifestyle behaviours'. I was engaged in the study from the beginning and part of the elaboration of study design, conduct of the study, including pre-arrangements, data collection, data analysis and write-up. The study is currently under second review at the Health Promotion Journal of Australia and deals with preschool children's play preferences and factors shaping their active play. Parts of the submitted manuscript were taken over for the purpose of this thesis.

The topic for the second part derived from the results of the qualitative study. This part includes systematically reviewed approaches or solutions in determining a balance of children's risky outdoor play and safety in childcare centres.

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## Abstract

**Title:** “It’s like you are in the jungle”: Using the draw-and-tell method to explore preschool children’s play preferences and factors that shape their active play

**Objective:** A child’s preference for active or sedentary play is a key proximal indicator of a child’s physical activity behavior. There is a need to understand children’s physical activity preferences in order to make physical play more enjoyable to them, this may encourage participation and a more positive relationship with physical activity. While this work is critical, little research has attempted to incorporate the perspectives of children themselves. This study specifically examines: (1) what activities do preschool children prefer; (2) what do children consider to be barriers and facilitators to participating in their preferred activity.

**Method:** The authors employed visual methodologies to explore the activity preferences of forty preschool children. Children were asked to draw their preferred activities and answer a series of open and closed questions about their drawing and what they think are barriers and facilitators to participating in this activity.

**Results:** Participant’s expressed a desire to play unstructured activities with friends or family, to engage in imaginative, challenging play, as well as the opportunity to have control over the activity they engage in. Children reported that rules at home and at childcare, the availability of toys, friends, family and having access to a natural environment served as both barriers and facilitators to them participating in their favorite activity.

**Conclusion:** Listening to children’s voices about their play preferences and the barriers and facilitators to engaging in these activities, provides important insight in children’s play behavior. The current findings will help to inform the design of programs and projects targeting physical activity increases in young children.

Keywords: physical activity, preferences, early childhood, pre-school, draw-and-tell



**“It’s like you are in the jungle”: Using the draw-and-tell method to explore preschool children’s play preferences and factors that shape their active play** (Wiseman, Rossmann & Harris, *under second review*)

**1. Introduction**

Children are seen to be naturally active, however, emerging patterns of increased sedentary behavior and decreased physical activity in young children challenges this common perception (Australian Bureau of Statistics, 2016; Noonan, Boddy, Fairclough, & Knowles, 2016). Regular physical activity is essential for a child’s growth and development and offers wide ranging health benefits. In infants, toddlers and preschoolers, higher levels of physical activity are related to better social and motor development, improved metabolic health and decreased adiposity (Hesketh et al., 2017). Some researchers have identified a positive correlation between exercise and academic achievement, children’s self-esteem and self-efficacy (Irwin, He, Bouck, Tucker, & Pollett, 2005). Despite the known benefits of physical activity, just over half (56%) of preschool aged children meet physical activity recommendations of three hours throughout the day (Australian Bureau of Statistics, 2016; Okely, Trost, Steele, Cliff, & Mickle, 2009).

Early childhood is a key age in which physical activity behaviors, attitudes and motor skills develop (Cammissa, Montrone, & Caroli, 2011). Encouraging habitual physical activity in young children is therefore crucial as physical activity behaviors tend to track from childhood through adolescence to adulthood (Lanigan, 2011; Monasta et al., 2010; Nemet, Perez, Reges, & Eliakim, 2007; Noonan et al., 2016; Schoeppe, Duncan, Badland, Oliver, & Browne, 2014; Tinsley, 2003) To encourage positive physical activity habits, it is essential that children experience environments supportive of developing positive physical activity behaviors. In order to provide an environment that facilitates physical activity participation, there is a need to understand factors which may be influencing the current rates of physical activity in preschool children.

A young child’s preferences for active or sedentary activities is one key proximal indicator of a child’s physical activity behavior (Irwin, Johnson, Henderson, Dahinten, & Hertzman, 2007). Parents’ abilities to facilitate regular physical activity in their children has been found to be a greater challenge for those with children who prefer more sedentary activities (Irwin et al., 2005). Encouraging a child to favor and enjoy active play is often a key

objective of physical activity interventions, as children are more likely to participate in physical activities for reasons of fun and enjoyment (Kellou, Sandalinas, Copin, & Simon, 2014; Noonan et al., 2016). When a child participates in an activity that they enjoy, they are more likely to experience increased emotional well-being by feeling happy and secure (Howard & Mcinnes, 2013; P. King & Howard, 2014). Children have their own perception of enjoyable play, which in most instances differs from adults' perceptions of what enjoyable play is to children (Howard & Mcinnes, 2013). Thus, there is a need to gain a child's account of their own physical activity preferences in order to make physical play more enjoyable to them. This may encourage participation and help to develop a positive relationship to physical activity.

Research into children's preferences for physical play and possible factors contributing to the decrease in physical activity in Australian children has underrepresented young children's voices. For the most part, this body of research has relied on the perspectives of parents (Veitch, Bagley, Ball, & Salmon, 2006) or has mostly involved school-aged children (Macdonald, Rodger, Abbott, Ziviani, & Jones, 2005; Noonan et al., 2016). Preschool children can be very important agents in making decisions concerning their own well-being and their perspective is essential to understand how they and/or others make choices for them around active play.

This study employs the draw-and-tell method to gain an understanding of children's physical activity preferences and children's perceptions of barriers/facilitators to participating in these activities, within the Australian context. The draw-and-tell method will be used as a way to engage children in the research being conducted, as opposed to simply asking them to respond to questions verbally. Drawings may also work to facilitate verbal discussion between the child and researcher, as children may be less inclined to feel as though they are being tested (Cammisa et al., 2011). When used in combination with a child's verbal interpretation of their drawings, a child's drawing serves as a valuable resource of children's perspectives and helps to ensure that the data is being used and interpreted appropriately (Cammisa et al., 2011). In the current study children will be asked to draw themselves in their preferred way of playing and will be asked questions about their drawings to understand their behaviors and ideas.

Gaining a child-centric view of the factors that prevent and facilitate them engaging in their preferred physical activity may help to identify plausible, context-specific behaviors

and aspects of the environment influencing physical activity participation. Further, an understanding of preschool children's preferred activities will be able to inform the design of programs and projects targeting physical activity increases in young children (Lobstein, James, & Cole, 2003).

## **2. Aim and objectives**

The overall research aim is gaining a child-centric view of factors that prevent and facilitate children in their preferred physical activity. This may help to identify plausible, context-specific behaviours and aspects of the environment influencing physical activity participation. An understanding of preschool children's preferred activities will be able to inform the design of programs and projects targeting physical activity increases in young children.

The objectives of this study include the following:

1. Determine preschool children's play preferences; and
2. Identify what children consider as barriers and facilitators to participate in their preferred activity

## **3. Method**

The study was completed in three participating childcare centres on the Gold Coast during the first two weeks of December 2017 by two researchers (Nicola Wiseman and Christin Rossmann). A cross-sectional design was used for the current study. Convenience sampling was applied and included 40 three-to-five-year-old children, enrolled in the participating child care centres. Parent's consent was requested in advance of the study by distributing information sheets regarding the research procedure and the informed consent. Upon return of parental consent, children were asked if they would like to participate in a drawing activity. Application for ethics was approved by the Human Research Ethics Committee of the Griffith University in Gold Coast (AUS) in November 2017.

The draw-and-tell method is a child-centred data collection technique, which incorporates semi-structured interviews conducted while children are engaged in a drawing activity. Particularly drawing activities have been used in previous studies with children and shown to be effective in providing additional information, as it gives a non-verbal expression of the child's favourite game (Einarsdóttir, 2017). Children were asked if they would like to

participate in a drawing activity as if it was a normal activity to perform within school time. They were asked to draw themselves engaging in their preferred activity. After a few minutes, the interview started with a list of questions, adapted from a study by Cammisa, Montrone and Caroli (2011) (list of questions, see p.12). This was to ensure that most central issues of inquiry were covered with all children while keeping an open mind for children's own initiative for telling stories that they were eager to communicate to the researcher. The interview guide incorporated twelve closed- and open-ended interview questions (e.g.: "What have you drawn? Why do you like it? Where do you play it?" full interview guide Figure 1). This may have encouraged natural answers and facilitated the reliability of responses. During the interview, the two researchers used non-verbal and verbal prompts like 'mhm' or 'really' and head nods, which indicates the researchers' interest of the child's story (Fargas-Malet, McSherry, Larkin, & Robinson, 2010). The questions were asked while the child was drawing, this to ensure that the activity did not feel like an interview-testing situation. Further, this allowed children to stay focused at the time of the data-collection. Children were interviewed by both researchers, who were introduced by the childcare educators before the data collection so that children felt comfortable speaking to the researchers. Two children at one time were interviewed by one researcher each, sitting at one table near the other participant to make the child feeling comfortable, but far away from each other to avoid distraction and prevent copying from each other. This may have been the case in the study by Cammisa et al., (2011), who conducted a drawing activity in groups and received a lot of similar results. The interviews were conducted in a quiet area in the classroom of the participating childcare centres and took approximately twenty to thirty minutes each interview. General field notes of the environment in the childcare centre were taken, particularly of the physical environment of the childcare centre, observed activities, available equipment (e.g. fixed, portable, electronic), the indoor and outdoor space and the social environment (e.g. rules or encouragement around physical play).

The audio-tapes from the interviews were transcribed into a word document after each day in one child care centre. The results, including the interviews and children's drawings were analysed using inductive thematic analysis to identify patterns and themes within the data. Open coding was applied by two researchers independently to identify and explain patterns within the data, which subsequently were clustered to broader themes and sub-themes. NVivo facilitated the organisation of the data by classifying and examining relationships within the data.

Table 1: Interview guide adapted from (Cammisa et al., 2011)

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## Questions

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1. Would you like to participate in this research/drawing activity? (y/n) (*if yes continue – if no activity will discontinue*)
2. Draw yourself while you are playing your favorite game (*While children are drawing, the researchers will observe children to give them more information, should it be needed, and to avoid children being influenced by others. As soon as the child starts coloring the drawing, the interview will start*)
3. Do you mind if I record us speaking? (*If yes, voice recording will start*)
4. What have you drawn?
5. Why do you like it?
6. Where do you play it?
7. Can you or can't you play it at your kindergarten/home?
8. Prompt if necessary, Why?
9. What game do you like the most being sitting/moving?\*
10. Why do you like it?
11. Where do you play it?
12. Can you or can't you play it at you kindergarten/home?
13. Why?
14. You have always spoken about indoor/outdoor games, why?\*\*\*
15. How do you imagine the perfect kindergarten where you can play moving or running?

\*The question will be asked according the answers previously given by the child (i.e. if the child has drawn a sedentary game, then the educator will ask about a movement game, or the opposite).

\*\*\*This question is for children who will give only one kind of answers in order to understand if there are specific problems.

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## 4. Results

### 4.1. Participant and childcare centre characteristics

Of nine requested childcare centres, three agreed to participate in the current study. In total, forty parents signed the consent form for their child's participation. A number of 29 children aged three to five years ( $M= 4.28$ ;  $SD= .71$ ) agreed to participate, of those 51.7% were female. Children showed a higher preference for active activities (55.2%) than sedentary activities (44.8%), whereas females preferred rather active outdoor activities and male participants sedentary indoor activities both played at home (see Table 2 and Table 3). There was no noticeable difference of preferred activities between children of different ages.

Table 2: Preferred activities (male)

Age	ID	Activity	Location	Active-type
5	CC1_1	Playing Frisbee with friends	Home inside/outside	Active
4	CC1_3	Watching batman on TV	Home/inside	Sedentary
5	CC1_4	iPad game (Monkey and Star Wars game)	Home/inside	Sedentary
4	CC1_5	Playing with toy spider and ninja turtle	Home/inside	Sedentary
4	CC1_6	A block and a snake game (iPad game)	Home /Inside	Sedentary
4	CC1_8	Computer game – keyboard climber	Home/Inside	Sedentary
5	CC1_9	Frisbee	Kindergarten/home outside	Active
4	CC1_10	Train tracks	Home/kindergarten/inside	Sedentary
5	CC2_1	Monopoly	Home/inside	Sedentary
5	CC2_2	Hide and Seek	Home/outside	Active
5	CC2_3	I-spy	Home/outside	Sedentary
3	CC2_4	Rollercoaster	Home/inside	Sedentary
3	CC3_3	Dinosaur game	Kindergarten/inside	Sedentary
4	CC3_8	Dinosaur games	Home/outside	Active

Table 3: Preferred activities (female)

<b>Age</b>	<b>ID</b>	<b>Activity</b>	<b>Location</b>	<b>Active type</b>
3	CC1_2	Drawing	Home /kindergarten/in-side	Sedentary
5	CC1_7	Building blocks	Home/Inside	Sedentary
4	CC1_11	Doggy Doggy, where's your bone	Home/outside	Active
4	CC2_5	Playing tag	Kindergarten/outside	Active
4	CC2_6	Colouring and playing with cousins	Home/inside	Sedentary /active
4	CC2_7	Hide and seek	Home/outside	Active
5	CC2_8	Duck, duck, goose	Kindergarten/inside	Active
4	CC2_9	Monkeys (computer game)	Home/inside	Sedentary
4	CC2_10	Trampoline	Home/outside	Active
3	CC3_1	Sandpit	Kindergarten/outside	Active
5	CC3_2	Run around and play	Kindergarten/home/outside	Active
4	CC3_4	Hide and Seek	Kindergarten/outside	Active
5	CC3_5	Playing sticks	Home/outside	Active
5	CC3_6	Climbing	Kindergarten/outside	Active
5	CC3_7	Doggy doggy, where's your bone?	Home/outside	Active

The childcare centres were similar in size and design. The outdoor areas were constructed of a combination of artificial grass, concrete, wood chips and rubber. Portable (e.g. tricycles, trucks) and fixed equipment (sandpit, climbing equipment, slides) was available as well as some sort of organised sport, delivered by an external professional (e.g. yoga, soccer). Children did not have access to electronic devices unless being used for learning purposes. Further, bringing toys to the childcare centre was not permitted in all childcare centres. Inductive thematic analysis resulted in six main themes and ten subthemes.

## **4.2. Unstructured play**

All preferred activities mentioned by the participating children were unstructured. In this study, play was defined as unstructured “[...] if the child was free to choose the activity, the materials, and the course of events and if the products or acts were individual and the teacher was not involved” (King, 1979). Being able to choose the activity by themselves appeared to be a consistent reason why children enjoyed participating in these activities. Some children reported the desire to engage in challenging activities, e.g. running as fast as possible or the unusual usage of playground equipment: “[...] and jumping off the castles that has the slides [in the playground]” (CC1\_8; male, 4 y.).

## **4.3. Social connections**

Being engaged in an activity with others was a main reason why children participated in their preferred activity. Most of the children mentioned the participation of friends, siblings or parents, e.g.: “Well I like playing tag with my friends” (CC2\_5; female, 4 y.). It became evident that in some of the children’s interviews children focused on who they were playing with, rather than the activity itself, e.g.: “I like playing with my friends in the classroom” (CC1\_7; female, 5 y.). Parents were also cited as a reason for the enjoyment of the activity: “[like activity] because I get to play with Mumma and Dada” (CC1\_11; female, 4 y.).

## **4.4. Indoor Play and Outdoor Play**

Activities played indoor and outdoor were mentioned equally by children as preferred play activities. Games played indoor can be categorized into two subthemes: ‘indoor games’ and ‘screen time’. Indoor games include games such as board games, playing with



toys (e.g. blocks, racing cars) and craft activities. Screen-based activities were played at home only e.g. “At home I only watch TV at home and sometimes I draw”.

The theme outdoor play comprises three subthemes: outdoor games, imagination and Nature. All mentioned outdoor games were active and required only in a few cases equipment (e.g. frisbee, trampoline). Other outdoor games requiring no equipment were child games such as hide and seek, tag, doggy doggy where’s your bone or duck duck goose: “[favourite activity] Doggy doggy where’s your bone... [Likes it because] You get the bone and you have to try and find it” (CC1\_11; female, 4 y.).

Outdoor play appeared to be connected to the subtheme imagination, as many outdoor games that children mentioned involved an element of imagination. Using imagination was also stated by children as a reason for enjoyment; for example one child stated: “ I like to play out there on the climby things [...] Because It’s like you are in the jungle [...] because I can see lots of animals and pretend, and we have lots of crocodiles and sometimes I pretend that there is a bridge that I have to climb over and there are crocodiles like peter pan” (CC3\_6; female, 5 y.)

It became evident in children’s responses and drawings that nature is something they would like to have at the childcare centre “[Would like to play] Hide and seek more and some more trees to hide with them [at kindergarten]”. Complementary to children’s responses, the pictures drawn by children showed flowers, trees and grassed areas.



Figure 1a. Playing duck, duck, goose with friends (CC2\_8; female, 5 y.)



Figure 1b. Playing hide and seek with Dad (CC2\_2; male, 5 y.)



Figure 1c. Playing building blocks (CC1\_7; female, 5 y.)

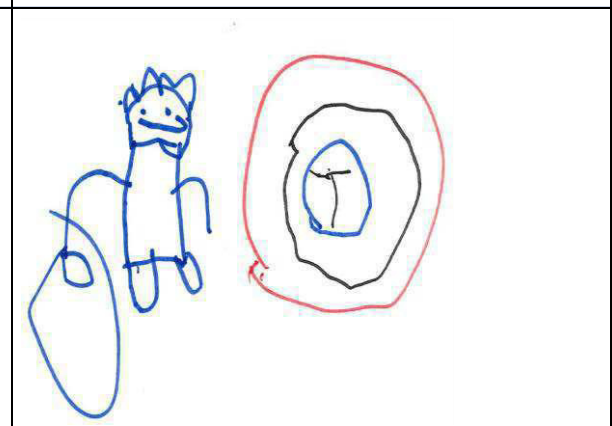


Figure 1d. Playing Frisbee (CC1\_9; male, 5 y.)

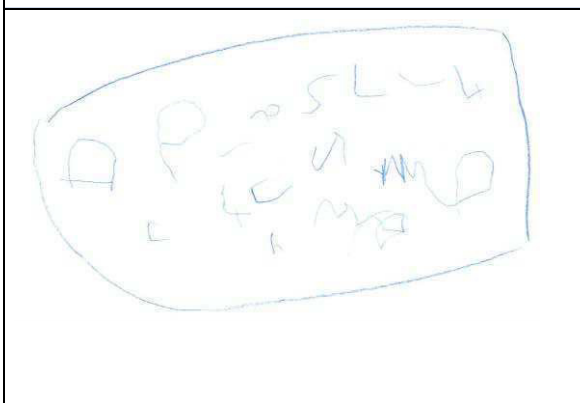


Figure 1e. Keyboard climber (computer game) (CC1\_8; male, 4 y.)

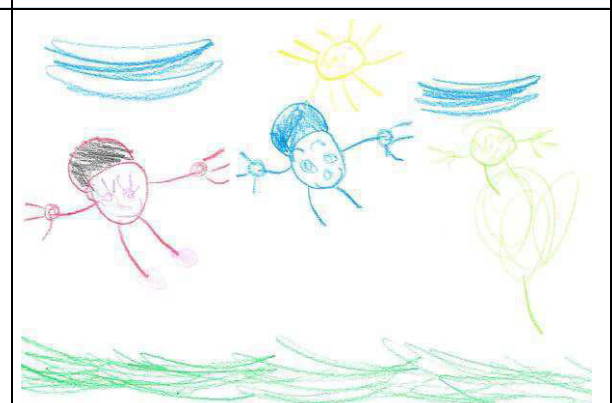


Figure 1f. Hide and seek with Mumma and Daddy (CC2\_7; female, 4 y.)

Figure 1: Examples of children's drawings

#### **4.5. Rules**

Rules aroused as a main theme in children's response and can be best treated by categorizing this theme into two subthemes: 'rules at childcare' and 'rules at home'. Rules at home comprised i.e. no running inside or bringing toys to the childcare as a precaution to prevent loss of the toy: "Because my mum and dad don't let me do it because I might lose a card or so [referring to bring toys to preschool]" (CC3\_2; female, 5 y.).

Further, children mentioned that they are not allowed to run inside because they would knock things over or fight with siblings because of insufficient space at home. Rules at childcare predominantly were about bringing own toys to childcare, the usage of electronic devices (except for teaching and learning purposes) and the timetable of the preschool, which allowed children only in certain times for free play: "I would also like to play hide and seek [at child care] but we can only play sometimes" (CC3\_6; female, 5 y.).

#### **4.6. Availability of Toys**

The availability of toys emerged as a main theme, as it was a prerequisite for some children to engage in their favourite activity. This included the desire to bring own toys to childcare e.g. "I would really like to play with my toys from home [at childcare], with my spider because it's so cool" (CC1\_5, male, 4 y.) or the variety of toys available at childcare "We have toys out there [outside at child care] and we play bikes and scooters and balls..." (CC1\_8; male, 4 y.).

Table 4: Themes, subthemes and representative quotes

Theme	Subtheme and representative quotes
<b>Unstructured play</b> (Choice, challenge)	<p>“I like to play out there on the climby things” (CC3_6)</p> <p>“Run away as fast as you can [favourite active game]” (CC1_6)</p> <p>“[in the perfect kindergarten where you can play moving or running] um I would like to play snakes and ladders and I would also like to play hide and seek but we can only play sometimes” (CC3_6)</p> <p>“[in the perfect kindergarten where you can play moving or running] playing outside” (CC2_7)</p> <p>“Umm [in the perfect kindergarten where you can play moving or running] there would be heaps of toys and we would play in the sand pit more and jumping off the castles that has the slides [in the playground]” (CC1_8)</p> <p>“[why do you like this activity] Because we get to choose [...] You can pick whatever you want” (CC2_3)</p>
<b>Co-participation</b>	<p>Friends “Well I like playing tag with my friends” (CC2_5)</p> <p>“I like playing with my friends in the classroom. And I like playing with my friends...” (CC1_7)</p> <p>Siblings “[plays with] My sister” (CC3_2)</p> <p>“[plays with] Lennox my brother” (CC1_9)</p> <p>Parents “[like activity because] Mum usually pushes us up on the trampoline” (CC2_10)</p> <p>“[like activity because] Because I get to play with mumma and dada” (CC1_11)</p> <p>“[like activity because] Because my dad plays” (CC2_2)</p>
<b>Indoor play</b>	<p>Screen time “I just like watching TV [at home], it’s my favourite watching TV” (CC2_3)</p> <p>“Well when it’s raining I like to watch a movie [at home]” (CC2_7)</p> <p>“At home I only watch TV at home and sometimes I draw” (CC2_3)</p> <p>“I play Mario Card on my iPad [at home]” (CC2_3)</p> <p>“[at home] Mummy reads my books to me at home and I like to watch some more movies” (CC2_6)</p> <p>“I would like to watch more movies [at kindergarten]” (CC2_7)</p>

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<b>Outdoor play</b>	Trees	<p>“[Would like] Trees and everything [at kindergarten], more trees, I like to climb trees, someone cut down a tree which is sad because we loved the tree” (CC1_11)</p> <p>“[Would like] Hide and seek more and some more trees to hide with them [at kindergarten]” (CC1_7)</p>
	Imagination	<p>“I like to play out there on the climby things [...] Because It’s like you are in the jungle [...] because I can see lots of animals and pretend, and we have lots of crocodiles and sometimes I pretend that there is a bridge that I have to climb over and there are crocodiles like peter pan” (CC3_6)*</p> <p>“[likes activity] Because we get to pretend we are dinosaurs” (CC3_8)</p> <p>“Pirate, Police and chasing [favourite active game]” (CC1_1)</p>

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## 5. Discussion

This study sought to examine children’s play preferences in child care and their perception of factors which facilitate or hinder engaging in preferred activities within the Australian context. Children mentioned unstructured activities only, engaging in these activities often with friends or family. Further, children showed a desire for having the choice over the activity they want to engage in, to have the opportunity using their imagination as well as to challenge themselves while playing. Having access to nature, the availability of toys, the presence of play mates (e.g. a friend) served as a facilitator for participating in their preferred activities. Rules at childcare or at home were often stated as a barrier for participating in the preferred activity; however, this mostly included the usage of screen-based activities or bringing own toys to childcare. The themes will be discussed in the context of existing literature regarding future research and public health practice.

### 5.1. Unstructured play

Children in the current study preferred to engage in unstructured play for having the choice over the activity they like to engage in, with some children reporting a desire for this activity to be challenging. Children’s preference for unstructured play aligns with previous

research (Little, 2017). Unstructured activities were reported by all children as their favourite activity and what they would like to participate in at their ideal childcare centre. The activity was defined as unstructured when it was chosen by the child and without direct involvement of an adult. This preference for unstructured play may be due to limited exposure to structured or guided activities such as yoga, soccer, at such a young age. Nonetheless, young children, particularly those that attend childcare, are increasingly being offered opportunities to engage in structured play or ‘packaged play’, in which trained professionals teach students a specific exercise. Thus, it would be expected that some children might prefer these activities, which was not evident in the current study (Dwyer, Baur, & Hardy, 2009).

Participants indicated a desire to have more autonomy over the activities they engage in. Despite children reporting parental involvement as a facilitator of their activity participation in this study, literature suggests that the involvement or attendance of an adult in child’s play is believed to lead to a reduction of a child’s choice of the activity. This appeared to be particularly relevant in this study in the childcare setting, where children were more conscious of rules and restrictions on play: “[...] I would also like to play hide and seek but we can only play sometimes”. It has been argued that if children do not have a choice over the activity or whether they would like to participate they do not demonstrate behaviours associated with increased emotional well-being compared to those that do (King & Howard, 2014). By giving a child autonomy and independence to engage in their preferred physical play facilitates increases in confidence and self-esteem (Howard & McInnes, 2013). However, it is noted that a child’s choice for play does not necessarily have to be completely free of adult intervention. For example, by giving a child opportunities to make a choice from a variety of activities rather than telling the child what to do, may lead the child to perceiving an increase in their level of choice (King & Howard, 2016). If a child perceives an activity as play, they are more likely to deeply engage, focus and feel more competent to try a wide range of behaviours, perceiving these behaviours as activities with minimal risk of failure (King & Howard, 2016). This may offer an opportunity to promote a preference for being physically active (King & Howard, 2014).

Participants also reported the desire to perform activities which they perceive as challenging. This is consistent with the current literature, as children’s active play naturally involves challenging or risky activities (Little, 2015). When children are young they are naturally inclined to test their physical limits and learn to avoid or adjust to dangerous environments and activities (Little, 2017; Sandseter, 2010; Wyver et al., 2010). Risky play allows a child to feel pleasant emotions such as happiness, excitement, exhilaration, fun, enjoyment

and thrill. It can also fuel unpleasant emotions in children such as feeling afraid or scared when they perceive too much danger (Little, 2017; Wyver et al., 2010). There is a constant struggle for parents and childcare educators to provide children with a stimulating environment, which promotes challenging play, minimises potential for injury and allows the child to unfold creativity and test their limits (Little & Wyver, 2008; Sandseter, 2012). Injury prevention is considered to play a more prominent role in promoting children's health (Brussoni, Olsen, Pike, & Sleet, 2012). Nevertheless, it has been suggested that too many restrictions on children's risky outdoor play may have a negative influence on the child's development (Copeland, Sherman, Kendeigh, Kalkwarf, & Saelens, 2012). Settings should provide affordances for challenging play, without being hazardous. A qualitative study conducted by Little (2017) found that Australian childcare workers felt as though the regulatory environment of the childcare restricted their ability to engage children in risk-taking or challenging play due to an over-emphasis on child safety by regulatory authority assessors. Educators reported being told by assessors to remove equipment and trees, rocks and other natural elements as they were considered unsafe. Little (2017) also reported that educators were apprehensive about what 'risky' play they could and could not allow children to engage in, due to inconsistencies in advice provided to them by regulatory bodies, which was exacerbated by their differing understandings of what risky play is, and perceptions of the level of risk associated with activities. Future interventions therefore should seek to support carers to implement and prioritise challenging play, and to recognise the difference between a hazardous activity and a challenge.

## **5.2. Outdoor play**

Preferred outdoor play activities mentioned by children predominantly involved active play. This is consistent with previous literature, as children are more likely active while playing outdoors (Gray et al., 2015; Vanderloo et al., 2014). The outdoor play environment is an important context for children's learning and development. The design of an outdoor area plays an important role in facilitating and promoting active play. For example, children might perceive a manufactured or built play area as unexciting due to the predictability of play and lack of diverse play opportunities, especially if the environment does not comprise enough space for running or opportunities to climb on and jump off things (Fuemmeler, Anderson, & Mâsse, 2011). Zamani (2016) highlighted in her study the importance of accessible natural elements for children to explore a complex and adaptable environment,

which inspires teamwork, creativity and imagination. This was reflected by participants of the current study, who expressed a desire for more natural features within the playground. Further, the outdoor activities mentioned by children often involved an element of imagination, with imagination often mentioned as a reason for the enjoyment of the activity.

### **5.3. Indoor Play**

The home indoor area was most frequently reported by male participants when talking about their favourite game, which in all cases included sedentary activities. Once established, learned sedentary habits in children tend to shape sedentary behaviour over time, particularly in boys (Hinkley, Salmon, Okely, & Trost, 2010). The frequent mention of screen-based games as preferred activities supports the work of other studies in this area linking sedentary behaviour with screen-based activities (Downing, Hinkley, Salmon, Hnatiuk, & Hesketh, 2017; Hinkley et al., 2010; Kostyrka-Allchorne, Cooper, & Simpson, 2017; Poitras et al., 2017).

One explanation for the high preference to engage in screen-based activities at home might be the prohibition of screen-based activities at child-care. Rules at childcare restricted children's participation in screen-based activities (e.g. iPad/computer), with children reporting that they were unable to bring such devices to their childcare centre as it was against the rules. A study conducted by Tucker van Zandvoort and colleagues (2011) revealed that parents of pre-schoolers rely on childcare staff to ensure their children are sufficiently active. Rules around screen time at childcare may contribute to the reasoning of parents to believe that their children are adequately active at childcare and thus are more willing to permit their children to engage in screen time at home. Tucker van Zandvoort et al. (2011) also described that childcare staff rely on parents to create an activity promoting environment. These mutual expectations and mistaken perceptions are of concern, as many studies demonstrate that pre-schoolers in childcare do not meet the recommended level of three hours active play per day (Department of Health, Australia).

### **5.4. Barriers and facilitators**

#### **5.4.1. Rules**

Rules within the home and at childcare appeared to both hinder and facilitate participant's active play. For example, children mentioned engaging in their preferred activity was



not possible because of rules such as “no running inside” because they were likely to “knock things over” or argue with siblings. Although beyond the scope of the current study, these responses may be partially explained by a study conducted by Pesch et al. (2015), in which many mothers reported that because they themselves were tired or overwhelmed, or because their children were making a mess, they put significant effort towards reducing their children’s activity level. Mothers would do so by turning on the television, reading a book to the child, or setting up an activity for the child like colouring or puzzles (Little, 2017). These parent–child interactions may be of concern as it may lead to a negative perception of PA among the children and a preference for sedentary activities.

#### 5.4.2. Nature

The desire for the more natural features within the outdoor area was expressed by participants and may be considered as a possible facilitator of their engagement in physical activity. The participating child-care centres did not provide children access to any natural features nor to a complete natural area (e.g. grass, trees, dirt, rocks). Thus, the desire expressed by participants for more trees to climb or hide behind them was not surprising. Trees can create a mystical atmosphere and inspire children’s imaginative play (Zamani, 2016). This theme is not supported by existing quantitative literature which suggest that natural features and the ground surface of childcare playgrounds, available shade, ground markings (e.g. bike track) have no association with children’s physical activity (Dowda et al., 2009; Gubbels, Van Kann, & Jansen, 2012; Tonge, Jones, & Okely, 2016; Trost, Ward, & Senso, 2010; van Cauwenberghe, Jones, Hinkley, Crawford, & Okely, 2012). Nonetheless, when children come in contact with nature, they benefit not only from higher levels of physical activity, but also get stimulated for their sense of responsibility, teamwork, competence and imagination (Dowdell, Gray, & Malone, 2011; Zamani, 2016). Literature suggests play spaces, which prioritise natural elements, including trees, plants and elements which can be manipulated by the child (e.g. water, mud, sand), allows a child to shape the play with their imagination (Brussoni, Ishikawa, Brunelle, & Herrington, 2017; Brussoni et al., 2012). Thus, it can be suggested that embedding more outdoor play and natural elements within a child’s playground may facilitate a child to prefer and engage in physical activity by allowing child’s play to be more complex and diverse (Dowdell et al., 2011).

### 5.4.3. Social connections

At a young age, much of play is social, which was reflected in children's responses. The majority of the activities preferred by children included friends, who play an important part in young children's social development and learning. This is consistent with existing literature, which suggests that the involvement of siblings and peers can facilitate children's physical activity levels (Hesketh, Lakshman, & van Sluijs, 2017). Participants also reported the participation of one or both parents as a reason why they liked their preferred game. Parents can serve as a role-model in being physically active and positively influence their child's physical activity level by being active themselves, material support and encouragement (Fuemmeler et al., 2011; Garriguet, Colley, & Bushnik, 2017). However, previous research has shown that parents sedentary behaviour and amount of time spent for screen-time activities has a negative impact on the child's active play (Jago, Fox, Page, Brockman, & Thompson, 2010). Therefore, parents can serve as a facilitator or barrier for their child being active.

## 5.5. The Draw-and-Tell-Method

The Draw-and-Tell method served as a suitable instrument to elicit children's preferences and understanding of barriers and facilitators. The drawings served as an indirect method for facilitating the conduction and the analysis of the interviews, focusing on the children's explanation of what the drawing is about. The use of drawings facilitated communication between child and researcher as it helped to overcome the brevity of their verbal responses (Driessnack, 2005). They filled important gaps to the verbal responses of the child (e.g. play partners were the focal point of the drawing rather than the activity itself;). It was evident that this method is not suitable for children younger than four years. Three-year-old children's drawings proved difficult to interpret, thus, the drawings presented in this study are those of four and five-year-old participants. From our experience using this method it is also recommended to let the child sit with a peer at one table to make her/him feel comfortable but far enough from each other, to prevent children copying from each other.

## **6. Limitations**

The current study is subject to limitations. The sample was derived from communities of medium-high socioeconomic status; thus, it is difficult to generalise the study findings. It was also evident that the childcare centres that participated in the study were similar in their resources and physical environment. Themes may not reflect the diversity of preschool children's perspectives.

## **7. Conclusion**

Listening to children's voices about their play preferences and the barriers and facilitators to engaging in these activities, provides important insight in children's play behaviour and the promotion of active play in early childhood. The current findings will help to inform the design of programs and projects targeting physical activity increases in young children. The results of this study show that children have a desire for unstructured activities and natural features in the environment as a prerequisite to engage in imaginative and challenging active play. It became clear that children would like to play a lead role in selecting the activity they engage in and that this may facilitate their enjoyment of activity play. Results indicated that outdoor play is an important facilitator for active play, but the design of a manufactured outdoor area in child care can be perceived as unexciting due to lack of variety and lack of opportunities for challenging play. More research needs to be conducted to determine a balance between safe play and challenging environments for children.

## **Abstract**

**Title:** Balancing children's risky outdoor play and safety in childcare centres: A systematic review of approaches and solutions.

Growing focus on children's safety has impacted children's play environments, resulting in a lack of stimulating opportunities for risky play in playgrounds, schools and kindergarten. Allowing children to take risks while avoiding severe injuries is a difficult task, particularly in rule-bound childcare centres. Research to date has not yet determined a balance between children's risky play and safety. This review aims to provide an overview of existing studies seeking to find approaches or solutions in determining a balance of children's risky play and safety. Seventeen studies were eligible for the inclusion of the review, with the selected journal articles being published between 2003 and 2017. Analysis of the reviewed articles resulted in three emerging themes, including the physical environment, educator practices and children's individual risk-management strategies. This review strengthens the idea of existing literature by supporting the need for stimulating, natural environments to provide adequate opportunities for children's risky play and educator's need to actualize these opportunities in childcare. Future research opportunities have been outlined and offer researchers and practitioners a useful foundation to develop new ideas or carry forward existing approaches.

**Keywords:** risky play, safety, outdoor play, early childhood, childcare centre

# **Balancing children's risky outdoor play and safety in the childcare centre: A systematic review of approaches and solutions.**

## **1. Introduction**

Societal and contextual changes have impacted on children's activities in the environment, resulting in declining rates of children meeting physical activity guidelines around the world (Tremblay et al., 2014). There is concern over the trend towards a sedentary lifestyle, which can result in negative health outcomes across the lifespan (Poitras et al., 2017; Tremblay et al., 2014). As a wide range of pre-school children's play activities are typically sedentary in nature, such as small motor play with toys, reading, puzzling etc, sedentary play should not automatically be denoted as negative or unhealthy behaviour. However, for motor development, pre-schoolers are recommended to be active at least 3 hours a day in a variety of physical activities of which 60 minutes play is characterised of higher intensity activities such as running, jumping, kicking and throwing (Australian Government Department of Health, 2018; Sugiyama, Okely, Masters, & Moore, 2012). The objective of children's motor education is the learning of a wide repertoire of fundamental motor skills (i.e. walking, running, jumping, catching, throwing etc.) as a foundation for more specialized skills needed in later development stages (Colella & Morano, 2011). In terms of developing healthy lifestyle behaviours, children being regularly active at a very young age tend to maintain physical fitness and activity behaviour through puberty (Janz, Dawson, & Mahoney, 2000). For instance, higher levels of physical activity during childhood have shown to be associated with less increasing body fat by the time of early adolescence (Moore et al., 2003). Therefore, the early years are the ideal period to prevent children from the negative outcomes of lack of physical activity, e.g. unhealthy weight gain, by establishing healthy habits and behaviours (Hesketh et al., 2017).

An increasing number of children (aged 4-5 years) in Australia are enrolled in a pre-school program (n= 339,243 in 2017), of those 95% attend preschool fifteen hours or more per week (Australian Bureau of Statistics, 2018). As many children spend a large proportion of their weekday waking hours in childcare, it is an important setting, which is supposed to provide sufficient opportunities for children to be active (Henderson, Grode, O'Connell, & Schwartz, 2015). In literature, there is an emphasis on 'active outdoor play'. Outdoor play

has been associated with higher levels of physical activity compared to indoor play. Therefore, characteristics of the outdoor play space at childcare such as space, type and quality of playground equipment are essential factors contributing children's self-directed active play (Farley, Meriwether, Baker, Rice, & Webber, 2008; Gubbels, Van Kann, Jansen, Kann, & Jansen, 2012; Henderson et al., 2015; Hinkley, Crawford, Salmon, Okely, & Hesketh, 2008; Raustorp et al., 2012). Low frequency of fixed playground equipment, more portable equipment, less electronic media use, the provision of jumping equipment, playground markings and playgrounds with more space were found to be promoting higher levels of physical activity and decreasing time spent in sedentary activities (Dowda et al., 2009; Gubbels, Van Kann, & Jansen, 2012).

Despite the knowledge of the developmental benefits of active play, in many western and economically advanced countries playground design is driven by safety (Little & Eager, 2010). Several studies acknowledged that safety policies or rules restrain physical activity and outdoor play to prevent possible injuries, often encouraged by parents and educator's safety concerns. Risk management strategies to minimise risk of physical injury include for example reducing the height of playground equipment to prevent possible falls, softening playground surfaces, rounding off sharp edges of playground equipment and ensuring stability (Sandseter & Sando, 2016). Some strategies appear to be reasonable as statistics demonstrate lower rates of preventable injury and mortality (Australian Institute of Health and Welfare, 2016). However, an increasing body of research criticizes the measures taken to ensure children's safe play, as they lower children's opportunities for challenges or risk-taking in play (Brussoni et al., 2012; Wyver et al., 2010). Risky play promoting studies argue that children learn important risk-management strategies by taking risks on their own. Children may develop coping skills of stimuli they previously feared, which lead to mastering such situations without fear in future with a higher level of competence (Little & Eager, 2010; Sandseter & Kennair, 2011).

The last two decades, literature discussing children's challenging or risky play has flourished. Observations of children's natural play indicated that children engage in challenging activities particularly outdoors, such as playing in great heights and high speeds (Brussoni et al., 2012). Stephenson (2003) identified significant elements of risk-taking activities in an ethnographic study conducted in New Zealand. This included "attempting something never done before; feeling on the borderline of 'out of control' often because of

height or speed and overcoming fear” (p.36). Sandseter and Kennair (2011) defined risky play as “a set of motivated behaviours that both provide the child with an exhilarating positive emotion and expose the child to the stimuli they previously have feared” (p. 257). Frequently observed activities associated with risk were sliding, swinging, climbing and bike riding with high speed among four-year-old children. Sandseter (2007b) observed children’s play in two Norwegian preschools and conducted interviews with children and educators. The content was analysed to conceptualise risky play, resulting in six categories including (1) play in great heights, (2) play with high speed, (3) play with dangerous tools, (4) play near dangerous elements, (5) rough-and-tumble play and (6) play where children can disappear/get lost. The categories include certain risk for injuries (e.g. injury from falling), which may result from risky activities (e.g. climbing) (see Table 5).

*Table 5: Categories and subcategories of risky play by Sandseter (2007a, 2007b)*

Categories	Risk	Subcategories
Great heights	Injury from falling	Climbing Jumping from still or flexible surfaces Balancing on high objects Hanging/swinging at great heights
High speed	Uncontrolled speed and pace that can lead to collision with something (or someone)	Swinging at high speed Sliding and sledging at high speed Running uncontrollably at high speed Bicycling at high speed Skating and skiing at high speed
Dangerous tools	Can lead to injuries and wounds	Cutting tools: knives, saws, axes Strangling tools: ropes, etc.
Dangerous elements	Where children can fall into or from something	Cliffs Deep water or icy water Fire pits
Rough-and-tumble	Where the children can harm each other	Wrestling Fencing with sticks, etc. Play fighting
Disappear/get lost	Where the children can disappear from the supervision of adults, get lost alone	Go exploring alone Playing alone in unfamiliar environments

In the context of adequate play provision and injury prevention, it is necessary to distinguish between the terms risk and hazard. Risk is often negatively connotated when talking about children's safety, generally used to describe a chance or likelihood of an adverse outcome (Ball, Gill, & Spiegel, 2008; Ball, 2002). In fact, risk encompasses situations where the outcome is uncertain and the individual is required to make choices about alternative course of actions (Brussoni et al., 2015; Little & Eager, 2010). Hazard on the contrary is a situation or product potentially causing harm (Ball, 2002). Little and Eager (2010) define hazard as "source of harm that carries with it a high probability of severe injury or death. These situations may be obvious, hidden, imperceptible or even unknown" (p. 499). However, every action and object may be hazardous in certain circumstances. In the context of child safety, good risks and hazards provide a high probability of having a positive outcome and a small chance of sustaining severe injury. A positive outcome may be a learning experience, personal growth and development. Bad risks and hazards have no obvious benefits for children's development and include e.g. sharp edges or weak structures that may collapse (Ball et al., 2008).

Present literature shows that children actively seek thrilling forms of play that involves challenge and an uncertain outcome. Growing focus on children's safety has impacted on children's play environments, resulting in lack of stimulating opportunities for risky play at playgrounds and outdoor play spaces at schools and childcare centres. Allowing children to take risks while avoiding injury is a difficult task to solve, particularly in rule-bound childcare centres. Research to date has not yet determined a balance between children's safety and risky play in childcare. However, there is evidence approaching this issue. It is timely to provide an overview of existing solutions or approaches to provide promising recommendations for future research. Further, the results of the review may have implications on adequate playground provision and educator's strategies in terms of dealing with both children's risky play and safety requirements.



## 2. Research aim and objectives

The purpose of the present study aims to review practices and approaches being used in existing literature to balance children's safety and risky play in the childcare centre's outdoor environment. The review will focus on how risky play can be enabled or rather to which level so that children's safety is still ensured.

The key objectives of this study are to:

1. systematically review approaches or solutions in determining a balance of children's risky outdoor play and safety in childcare centres
2. identify opportunities for interventions in research to give key recommendations for future studies.

## 3. Method

### 3.1. Search strategies

Articles were sourced from four online databases including: ERIC, ProQuest, CINAHL and Embase. The search was conducted during the last week of May 2018 and beginning of June, using the following key terms: "risky play", risk, restrictive, kindergarten, preschool\*, child\*, playground, environment and outdoor. The search was refined by searching only for peer reviewed articles available in English language (see table 3). Reference lists of scanned articles were also reviewed for potential inclusion.

Table 6: Literature search tracking sheet

Data of search	Database	Adjustments	Search terms	#hits	#saved
30/05/2018	ERIC	Only research articles and reports	Risk* OR restrictive AND play AND kindergarten OR preschool* OR child*	332	34
31/05/2018	ProQuest	Only peer-reviewed research articles in English language; search terms in abstract	"Risky play" AND kindergarten OR preschool* OR child*	116	24

31/05/2018	CINAHL	Only peer-reviewed research articles in English language; search terms in abstract	“Risky play” AND play-ground OR environment AND preschool* OR kindergarten	350	3
01/06/2018	Embase	Only peer-reviewed research articles in English language; search terms in abstract; year 2000-2018	“Risky play” AND kindergarten OR preschool* AND playground OR outdoor	702	13
				1500	74

### 3.2. Study selection process

After screening of citations and the removal of duplicates, full-text articles were reviewed for potential inclusion. Studies considered to be relevant were exported to Mendeley (Version 1.18) and reviewed to verify whether they met the inclusion criteria. If the article did not meet the inclusion criteria, it was removed and the reason for exclusion noted (see figure 2: study selection process).

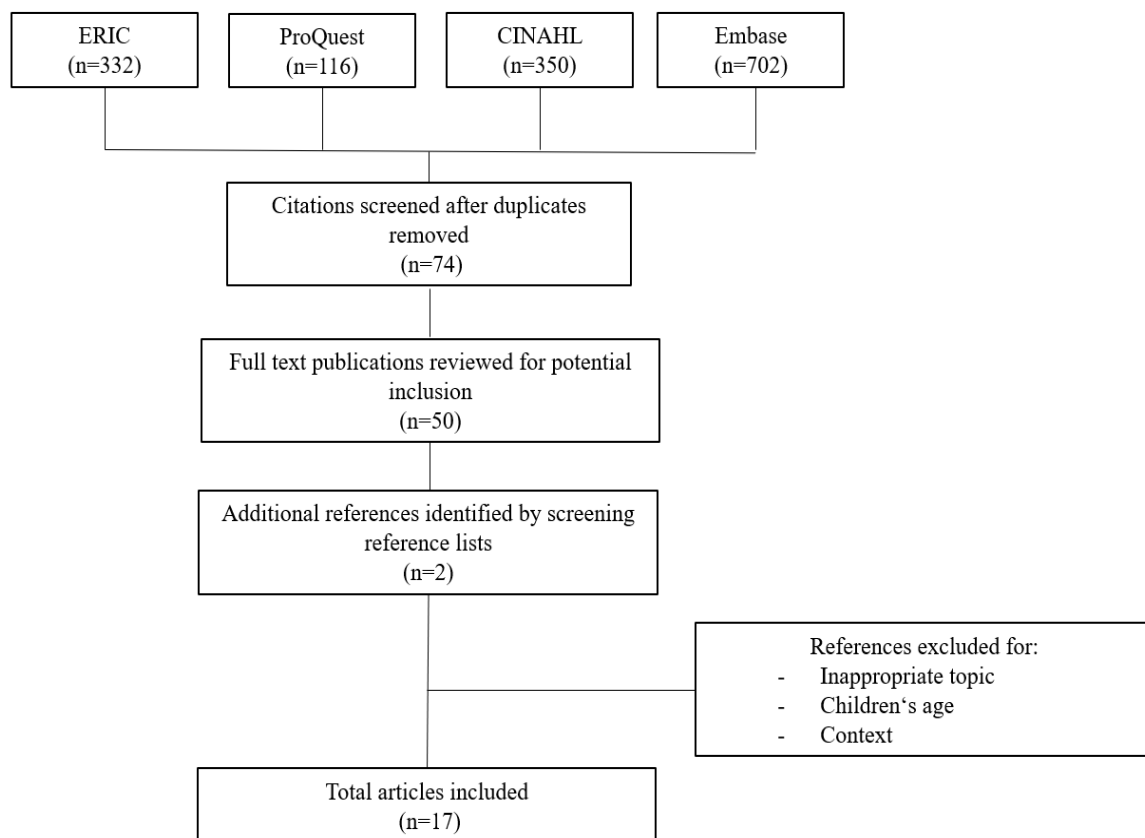


Figure 2: Study selection process

### 3.3. Inclusion criteria

Studies included in the review were evaluated according to the following inclusion criteria: (1) incorporates children’s risky play and directly or indirectly provides insight into childcare related strategies which seek to balance safety and risky play (2) if children are included, participant’s age is three to five years (4) the study dealt with the outdoor environment of a child care centre (4) publication was available in English language and peer-reviewed.

### 3.4. Data extraction and analysis

Data was systematically extracted using a purpose-designed extraction tool, including the categories (1) author (2) year (3) country (4) objectives (5) study design (6) assessment method (7) sample size and age of participants (8) incorporated approaches and strategies and (9) theme (after analysis of the reviewed studies, approaches and strategies in the reviewed studies were classified into themes). A shortened version of the data extraction table is shown in the results section on pp. 44 (long version in Appendix on pp. 65). The

content of each article was analysed in form of a bottom-up process in order find emerging themes, which incorporated approaches or solutions concerning the research aim (Colman, 2009).

### **3.5. Quality assessment**

Due to the majority of qualitative studies, quality was rated by using a quality assessment tool for qualitative studies drawn by Lorenc et al., (2014). The studies were rated on basis of the *rigour* (thoroughness and appropriateness of the use of research methods), *credibility* (meaningful, well presented findings) and *relevance* (utility of findings) (Kitto, Chesters, Grbich, & Medical, 2008). The tool contains nine questions, which were answered and scored accordingly: ‘good’ (4 points) ‘fair’ (3 points), ‘poor’ (2 points) or ‘very poor’ (1 point), resulting in high (30-36 points), medium (24-29 points) or low quality (9-24 points) of the study (see Appendix, pp. 73)

## 4. Results

The search resulted in a total number of 1500 articles, of those 74 were considered for potential inclusion. After citation screening and removal of duplicates, the abstracts of 50 articles were screened for relevancy. In total, 27 articles were saved and transferred to Mendeley. Screening of relevant citations in reference lists and the subsequent reading of the abstracts, resulted in two additional articles. A final number of 17 articles were included. The most frequent reasons for exclusion were first, the inappropriateness of the topic; second, children's age and third, if the study dealt with outdoor environments other than the childcare environment e.g. community or school playgrounds (see figure 2).

### 4.1. Study characteristics

Reviewed articles were published between 2003 and 2017 in Australia, Canada, Norway, New Zealand, USA and Belgium (order correspondents to the number of published studies, beginning with the highest number). Of seventeen articles, thirteen used a qualitative (Blanchet-Cohen & Elliot, 2011; Brown & Kaye, 2017; Brussoni et al., 2012; Coe, 2017; Little & Wyver, 2008, 2010; Little, Wyver, & Gibson, 2011; McClain & Vandermaas-Peeler, 2016; Sandseter, 2009c, 2012; Sandseter & Sando, 2016; Stephenson, 2003; Waters & Begley, 2007) and five studies a mixed-method research design (Lavrysen et al., 2017; Little, 2017; Little & Sweller, 2015; Little & Wyver, 2008; Little et al., 2011), including the following assessment methods: Interviews, observations (or both); questionnaires and ethnographies and reviews. Within the reviewed studies, participants were either children (n = 1 to 433, aged 3 to  $6.6 \pm 0.5$  years), educators or childcare managers (n = 1 to 335).

## **4.2. Quality Assessment**

As most of the included studies used a qualitative research design, a quality assessment tool for qualitative studies was used. This was also applicable for studies using a mixed-method research design. The quality of the studies was classified as high, medium or low quality according to the quality assessment tool by Lorenc et al. (2014). Of seventeen included studies, nine were classified as “high”, seven as “medium” and one as “low” quality. In three cases, certain questions were not applicable due to a different study design (e.g. ethnographic approach). These studies did not receive a final quality rating.

Table 7: *Quality assessment of included studies* (Lorenc et al., 2014)

Author (year)	Abstract and title	Introduction and aims	Method and data	Sampling	Data analysis	Ethics and bias	Results	Transferrability/generalisability	Implications and usefulness	Total score	Quality rating
Blanchet-Cohen & Elliot (2011)	4	3	3	1	1	4	4	3	3	26	<b>medium</b>
Brown & Kaye (2017)	4	3	n.a.	n.a.	n.a.	n.a.	4	n.a.	2	/	/
Brussoni et al. (2012)	4	4	1	n.a.	1	n.a.	4	n.a.	4	/	/
Coe (2017)	4	3	4	3	4	1	4	3	3	26	<b>medium</b>
Lavrysen et al., (2017)	4	4	4	4	4	4	4	3	4	35	<b>high</b>
Little (2017)	4	4	4	4	4	3	4	4	4	35	<b>high</b>
Little & Sweller (2015)	4	4	4	4	4	4	4	4	4	36	<b>high</b>
Little & Wyver, (2008)	4	4	4	n.a.	n.a.	2	4	3	2	/	/
Little & Wyver (2010)	4	4	4	4	2	3	4	3	4	32	<b>high</b>
Little et al., (2011)	4	4	4	4	3	1	4	3	4	31	<b>high</b>
McClain & Vandermaas-Peeler (2016)	4	3	4	3	4	4	4	3	3	32	<b>high</b>
Sandseter, (2009c)	4	3	4	2	4	3	4	3	1	27	<b>medium</b>
Sandseter (2012)	4	3	4	4	4	4	4	4	4	35	<b>high</b>
Sandseter, (2009a)	4	3	3	2	4	4	4	2	2	26	<b>medium</b>
Sandseter & Sando (2016)	4	3	3	4	4	4	4	3	3	32	<b>high</b>
Stephenson (2003)	3	3	3	2	3	1	3	2	3	23	<b>low</b>
Waters & Begley (2007)	4	2	4	3	4	3	4	3	3	30	<b>high</b>

### **4.3. Themes**

A variety of studies were conducted, which directly or indirectly contributed to the body of knowledge on how to manage the balance between risky and safe play. Approaches or strategies were filed into three emerging themes: (1) the physical environment (2) educator practices and (3) children's individual risk-management. In six of seventeen articles, the study incorporated more than one theme (see Table 9: Summary of data extraction (short)).

#### **1.1.1. The physical environment**

Environmental approaches comprise ways of providing an adequate environment for children's risky play while keeping them safe. In two studies it was explicitly mentioned that the occurrence of risky play needs to be in an environment free of hazard, but not of risk and that children can be kept "as safe as necessary but not as safe as possible" (Brussoni et al., 2012; McClain & Vandermaas-Peeler, 2016, p. 3134). As an adequate environment, five studies promoted play outdoors in a natural environment or with natural elements, as nature can provide a rich and diverse environment with various opportunities for children's risky play (Blanchet-Cohen & Elliot, 2011; Brown & Kaye, 2017; Little & Wyver, 2008; Sandseter, 2009a; Waters & Begley, 2007). Sandseter (2009) compared risky play opportunities in a traditional playground and a natural playground. Both provided opportunities for play in great heights, with high speeds, with dangerous tools (under surveillance) and rough-and-tumble play. However, the nature playground offered more opportunities and included all categories of risky play, such as play near dangerous elements and places where children can disappear or get lost. Similar results gained a small-scale exploratory study by Waters and Begley (2007), who observed risk-taking behaviours of two children (child A: most likely to take risks; child B: least likely to take risks) in two different playground settings. One setting was an outdoor play-space of a primary school and the other one was a forest school site located in a nature reserve. The researchers observed that both children displayed varied forms of risk-taking behaviours during free play sessions at the forest school, but not at the primary school site. The authors suggest that this is because of the rule-bound nature and the lack of exciting playground equipment at the school play-space. McClain and Vandermaas-Peeler (2016) compared children's risky play in a semi-structured outdoor playground and a wilder space close to a river in a local state park. At the river, children faced more challenges, resulting in social interactions with peers, including helping each other or feeling encouraged to try something new because the peer was doing it. The authors advocate,



that providing a diversity of outdoor experiences with varying degrees of risk promote children's development and personal growth by overcoming challenges.

Three studies highlighted the importance of playground equipment that allows for the engagement in risky activities but with a low risk of severe injury, were specified by three studies (Coe, 2017; Little, 2017; Stephenson, 2003). Stephenson (2003) suggests the need for "acceptable" challenges for four-year olds, which she observed in several childcare centres. This included swing attachments, that are regularly changed; heavy loose materials (e.g. tyres, planks, ladders, boxes) allowing children to test their strength by shifting and ropes for different purposes, such as swinging out of the tree or pulling up a slide or bank. Little (2017) investigated the outdoor play provision of 245 early childhood education centres (ECEC) in Australia in terms of space, resources and planning for risk-taking in play. Upon the open question posed to educators 'how do you plan challenging outdoor learning environments that encourage children to take calculated risks', two broad approaches were mentioned. The first approach incorporated suggestions, that solely related to altering gross motor equipment (e.g. to provide greater heights or more complex obstacle courses). According to the authors, associating risk-taking in play with gross motor equipment only covers two of Sandseter's categories (i.e. height and speed) and is not sufficient in providing a variety of risky play opportunities. The second approach consisted of suggestions for playground equipment that is of 'manageable' risk. This included boulders and low trees for climbing, little fixed equipment, variable elements (e.g. sand), logs, ropes, stages and decks to create a stimulating environment. Suggestions for the design of the landscape architecture to provide a play environment and opportunities for risky play were mentioned by two studies (Coe, 2017; Stephenson, 2003). This included flat and steep terrain and uneven paths to create opportunities for climbing, sliding and digging tracks and steps.

### **1.1.2. Educator practices**

Educator practices appeared to play an important role in balancing safe and risky play within the childcare setting (Blanchet-Cohen & Elliot, 2011; Coe, 2017; Little, Sandseter, & Wyver, 2012; Little et al., 2011; McClain & Vandermaas-Peeler, 2016; Hansen Sandseter & Sando, 2016). Educators among the studies dealt differently with children's risky play, including prevention and intervention strategies to decrease the risk of injury (see Table 8).

Preventive strategies comprise measures that were set up before a risky situation occurred. Of the reviewed studies, six studies involved preventive strategies including supervision, adequate staff-child ratio and pre-determined safety rules. The supervision and attentiveness of educator's was explicitly mentioned in five studies (Blanchet-Cohen & Elliot, 2011; Coe, 2017; Little et al., 2011; Sandseter, 2009c; 2012). In the study by Blanchet-Cohen and Elliot (2011) educators supported children's exploration of the natural outdoor environment. They expressed that they like to see where children's play takes them and allow children freedom to decide what they want to play. Children were supervised all the time, from a position afar, if a situation was perceived as less risky (e.g. hiding in a cave) or closer if the situation was perceived as higher risk. A similar attitude towards risky play were reported by educators in several of the included studies (Sandseter, 2009b; 2012; Little et al., 2011; Coe, 2017; McClain & Vandermaas-Peeler, 2016), with educators paying extra attention in dangerous situations (e.g. playing with dangerous tools; playing near a creek), prepared to intervene if necessary. Providing an adequate child-staff ratio to reduce risk was mentioned in three studies (Coe, 2017; Little & Sweller, 2015; Little & Wyver, 2008b; Sandseter & Sando, 2016), of those only Coe (2017) specified the size of the ratio, which was valued as low (1:6) by the authors. Sandseter and Sando (2016) mentioned an insufficient adult-child ratio as a reason for not going on trips to places with water. In a few childcare centres, educators acknowledged pre-determined safety rules, which do not restrict play, but reduce the risk of injury. This included determining the climbing height (Little & Sweller, 2015), which involved in two studies the provision of tapes on trees (Coe, 2017; Little, 2017), arrangement of stopping points along a trail (McClain & Vandermaas-Peeler, 2016), breaking jumps off great heights into several stages (Blanchet-Cohen & Elliot, 2011), climbing only allowed when demonstrated in advance and balancing in great heights only allowed if the surface is covered with snow (Sandseter & Sando, 2016). In a nature-based early years programme in Canada, Coe (2017) observed children involved in activities (e.g. tree climbing) that could be perceived as too risky in traditional preschool context. In the forest school, educators had a positive attitude to risk ('We like to remove the hazard and not the risk', p.384). Teacher attentiveness, peer attentiveness and self-awareness were mentioned as safety measurements to reduce potential risks or hazards. This involved the educator's awareness of possible risks in the environment and the safety needs of the enrolled children. Peer attentiveness included helping each other to stay safe (e.g. looking for tick bites after a bush walk; awareness for peers on a hill, when rolling down).

Intervention strategies were applied if a situation appeared, which was perceived as risky that required intervention. Within the reviewed studies, educator’s response involved physical support, encouragement, instructions to help to master the activity (Little et al., 2011; Sandseter, 2009b), restricting or constraining the activity, providing small safety reminders and redirecting the activity (Blanchet-Cohen & Elliot, 2011; Coe, 2017; Sandseter, 2009b).

Table 8: Educator practices

	Strategy	Examples
<b>Prevention</b>	Supervision	- Paying extra attention or supervising activity from a closer position if perceived as dangerous (Sandseter, 2009b; 2012; Little et al., 2011; Coe, 2017; McClain & Vandermaas-Peeler, 2016)
	Child-staff ratio	- Providing a low staff-child ratio (1:6) (Coe, 2017) - Providing an ‘adequate’ staff-child ratio (without further information about number of educators and children) (Coe, 2017; Little & Sweller, 2015; Little & Wyver, 2008; Sandseter & Sando, 2016)
	Pre-determined safety rules	- Determining climbing height by providing tapes on trees (Coe, 2017; Little, 2017) - Climbing only allowed when demonstrated in advance (Sandseter & Sando, 2016) - Arrangement of stopping points along a trail (McClain & Vandermaas-Peeler, 2016) - Breaking jumps off great heights into several stages (Blanchet-Cohen & Elliot, 2011) - Balancing in great heights only allowed if surface is covered with snow (Sandseter & Sando, 2016)
<b>Intervention</b>	Encouragement; physical support	- Educator joins activity, which involves sledding down a hill with a mattress and is willing to increase speed (Sandseter 2009b)
	Instructions that help to master the activity	- Guiding the child down a tree or climbing equipment (Sandseter, 2009b)

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Providing small safety reminders	- reminding to be cautious (Sandseter, 2009b)
Redirecting the activity	<ul style="list-style-type: none"> <li>- breaking the jump into two stages if height is above licensing regulations (Blanchet-Cohen &amp; Elliot, 2011)</li> <li>- asking the child play less aggressive during rough-and-tumble play (Coe, 2017)</li> <li>- asking the child to climb down to descend height (Sandseter, 2009b)</li> </ul>
Restricting	- restriction to play fighting, fencing or wrestling (Sandseter, 2009b)

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### **1.1.3. Children’s individual risk-management**

A few studies supported the belief that children are aware of their skill level and that individual characteristics are important to consider in understanding factors that influence children’s decision-making in risky situations. The authors view children’s adequate evaluation of a risky situation as an innate tool that can be trusted to limit children’s risky play from being hazardous (Brussoni et al., 2012; Coe, 2017; Lavrysen et al., 2017; Little & Wyver, 2010; Sandseter, 2007b). According to Brussoni et al. (2012), children approach risky activities differently because of distinct levels of confidence and eagerness, as well as the awareness of their physical capabilities. For example, in the study by Coe (2017), some children did not feel comfortable jumping down from great heights and therefore chose to carefully slide or climb down. Activities were adjusted according to perceived danger. In the study by Sandseter (2007) children were observed using freely available tools that were potentially dangerous (knife for whittling, saws, hammers, nails) under supervision of their educator. In most cases children were deeply concentrated when engaging in these activities, conscious of the present risk. However, Little and Wyver (2010) found that children (3-5 years old) are able to make risk judgements but are less able to appraise the severity of the injury associated with such behaviours. Children were able to identify components of playground equipment they would experience difficulties with because of reasons based on their own abilities associated with age, size, strength, previous experiences and possible injuries but were not able to determine the severity of outcomes. The authors stated that risk appraisal is still developing in children of that age. A preventive approach to improve risk competence was tested by Lavrysen et al. (2017). Children received a training in form of a three-month

short-term intervention with risky situations. The training group was provided with two different risky activities per week, including risky activities according to Sandseter’s categories (2007) except for the category “presence of dangerous elements”. The activities were presented by the children’s teachers. The training resulted in improvements in risk perception and competence skills aiming to make play safer.

Table 9: Summary of data extraction (short)

<b>Author (year)</b>	<b>Objective(s)</b>	<b>Approach(es)</b>	<b>Theme</b>
Blanchet-Cohen & Elliot (2011)	Examining how educators mediate outside restrictions on children’s play	<ul style="list-style-type: none"> <li>- Supervision (from distance if less risky, closer if risky);</li> <li>- Awareness of risks but trusting children’s abilities to manage risk-taking (e.g. when jumping off a rock)</li> <li>- Redirecting activity (e.g. breaking jump in several stages to reduce level of height;</li> <li>- Safety reminder: staying in eyesight</li> </ul>	Educator practices
Brown & Kaye (2017)	Examining the role of early education care in advocating and providing nature play in an era where children’s exposure to nature play and risks is threatened	<ul style="list-style-type: none"> <li>- Schoolyard is an appropriate setting for children’s positive risk-taking experiences</li> <li>- Promoting nature as ideal environment for children’s risk-taking (examples: Forest schools)</li> <li>- Teacher plays key role in allowing risky play to occur</li> </ul>	The physical environment
Brussoni et al. (2012)	Exploring the relationship between child development, play, and conceptions of risk taking with the aim of informing child injury prevention	<ul style="list-style-type: none"> <li>- Providing an environment which is “safe as necessary, not as safe as possible” (p. 3134)</li> <li>- Focusing on eliminating hazards instead of risks</li> <li>- Promoting children’s need to manage risks according to age and ability</li> </ul>	The physical environment

Coe (2017)	Exploring the safe risk-taking and risky play experiences of four children at a nature-based early years program in rural Ontario	<ul style="list-style-type: none"> <li>- If children did not feel comfortable in great height, they chose to carefully slide or climb down</li> <li>- Children approached risky activities differently (differences in confidence and eagerness; awareness of physical capabilities)</li> <li>- Using of dangerous tools – access only under supervision</li> <li>- Playing at frozen creek or fire pit – children adhered to pre-established rules, safety reminders given by educators</li> <li>- Redirection of rough-and-tumble play in safer direction without restricting it</li> <li>- Hazard-reduced play possible by teacher’s attentiveness, children’s self-awareness and peer attentiveness (e.g. helping each other to stay safe)</li> <li>- Environmental safety check points along trails</li> <li>- Sufficient teacher-child ratio (1:6)</li> </ul>	Children’s ind. risk-management / educator practices
Little (2017)	Investigating outdoor play provision in terms of resources, space and affordances for physical activity and risk-taking in play	<ul style="list-style-type: none"> <li>- Suggestion of one childcare centre: installing ‘managed’ risks – boulders for climbing, low climbing trees, uneven paths, stages, decks, logs, ropes, sand (variable elements), having little fixed equipment to provide a dynamic environment</li> </ul>	The physical environment
Little & Sweller (2015)	Investigating outdoor play provision in terms of resources, space and affordances for physical activity and risk-taking in play	<ul style="list-style-type: none"> <li>- Climbing equipment: Majority of centres (36.2%) allowed a maximum climbing height of 0.5-1.0m, 31.2% allowed children heights of 1.-1.5m, 21.4% of centres allowed children to climb heights of more than 1.5m and 10.3% restricted climbing to heights of 0.5m or less.</li> <li>- Need for adequate adult/child-ratios to go on trips</li> </ul>	Educator practices
Little & Wyver (2008)	Examining the current status of outdoor play in urbanised, western societies such as Australia and providing critical analysis of the literature to present an argument for the inclusion of positive risk-taking experiences in children’s outdoor play	<ul style="list-style-type: none"> <li>- Promoting risk-taking by maintaining safety for children</li> <li>- Advocating for adequate staff-child ratios to ensure consistent supervision of children’s physical play (high staff-child ratio leads to minimisation of risks)</li> </ul>	Educator practices

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Little et al. (2011)	Investigating adult attitudes towards risk-taking and whether children's experiences of risky play differ according to the contexts in which the play takes place	<ul style="list-style-type: none"> <li>- Supporting children to engage in risky activity through physical support, encouragement and instructions that help to master the activity</li> </ul>	Educator practices
McClain & Vandermaas-Peeler (2016)	Examining the ways in which natural environments influenced preschooler's physical and socioemotional development	<ul style="list-style-type: none"> <li>- Pre-arranged stopping points along trail to give children the opportunity to climb or jump off rocks; also served as a measurement to wait for the rest of the group</li> <li>- Natural environments provide adequate affordances for risky play</li> <li>- Nature at river was wilder and children faced more challenges compared to the environment at the creek; children were supportive for their peers in terms of helping each other</li> </ul>	The physical environment / educator practices
Sandseter, (2009b)	Examining how preschool children seek out and manage risks in play and how preschool staff manages children's risk-taking in play	<ul style="list-style-type: none"> <li>- Children appeared to be aware of their level of competence and risk they are comfortable with (e.g. decided to refuse joining an activity to avoid risk in the play situation)</li> <li>- Educators strategies: restricting/constraining, supervision (keeping a close eye), contributing/initiative, redirecting activity (e.g. asking child to climb down to descend height; being less aggressive in rough-and-tumble play)</li> </ul>	Children's individual risk-management / educator practices
Sandseter (2012)	Examining how EHEC practitioners perceive and value children's risk-taking in play in the kindergarten setting	<ul style="list-style-type: none"> <li>- Individual evaluation of each child's abilities (considering if there is a need for paying extra attention or restriction) in a risky situation</li> <li>- Allowing and supporting risky play by ignoring own fears and limits (Injuries are a natural part of children's play)</li> <li>- Using common sense (e.g. if children climb to high (6-7m) they ask them to come down)</li> </ul>	Educator practices / children's individual risk-management

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Sandseter, 2009a)	Exploring affordances for risky play in two different preschool environments	<ul style="list-style-type: none"> <li>- Both preschools offered risky play opportunities, but nature playground offered opportunities from all of Sandseter's categories of risky play</li> <li>- Risks higher on nature playground (higher trees, cliffs, rocky walls, big rocks, etc.)</li> <li>- Supervision and attentiveness, pre-established rules to avoid accidents and injuries in both schools</li> </ul>	The physical environment/ educator practices
Sandseter & Sando (2016)	Exploring how Norwegian early childhood education and care practitioners handle the increasing safety focus in Norwegian society	<ul style="list-style-type: none"> <li>- Tree climbing was either restricted, only permitted when supervised by adult, after the demonstration of competence in climbing or only up to a certain height</li> <li>- Balancing only permitted when there is deep snow (soft surface)</li> <li>- Avoidance of playing with ropes due to danger of strangulation</li> <li>- No trips to places with water access (insufficient staff-child ratio)</li> </ul>	Educator practices
Stephenson (2003)	Identifying acceptable physical challenges for 4-years old's  Examining how we can juggle the need for challenge with the increasingly restrictive safety requirements	<ul style="list-style-type: none"> <li>- Acceptable physical challenging opportunities:</li> <li>- a range of swing attachments (regularly changed)</li> <li>- heavy loose materials such as tyres, planks, ladders and boxes (experiences in testing strength)</li> <li>- materials to construct (having responsibility)</li> <li>- ropes (opportunity to climb up or down, swinging from one side to the other)</li> <li>- steep terrain (opportunities for climbing and sliding, digging tracks and steps)</li> <li>- digging area in soil</li> </ul>	The physical environment
Waters & Begley (2007)	Examining risk-taking behaviours displayed by four-year-old children in two different play spaces	<ul style="list-style-type: none"> <li>- Children displayed various risk-taking behaviours in the forest school, but not at the school playground.</li> <li>- Despite differences in pre-existing tendencies towards risk-taking, both children had learning experiences at the forest school</li> </ul>	Children's individual risk-management/ the physical environment

\*n.i.= not indicated; n.a.= not applicable



## **2. Discussion**

Determining a balance between children's safety and their need for risky play in play is a difficult task to solve. This systematic review reveals that to date, few studies have attempted, to approach this issue. It was found that there is no general solution, rather various approaches to dealing with children's risky play. Within the reviewed articles, strategies could be divided into three emerging themes including the physical play environment, educator approaches and children's own risk-management. Taken together, these results suggest that a stimulating, preferably a natural environment, may provide adequate opportunities for children's risky play and that educator's decisions appear to be the key to actualizing these opportunities.

### **2.1. The physical environment**

A natural setting has been promoted as an adequate environment for children's risky play, as it provides a richer and more diverse environment compared to manufactured play spaces with 'traditional' playground equipment. In accordance with the results of this finding, previous studies have demonstrated that children show a preference for natural environments, as they provide a greater range and complexity of play than traditional playgrounds, which is more attractive to children (Luchs & Fikus, 2018; Tremblay et al., 2015). A physically diverse environment promotes learning and development. It facilitates children's imaginative play, teamwork and creativity and has shown to be beneficial for children's activity level, balance and coordination abilities, emotional regulation and social development (Dowdell et al., 2011; Fjørtoft, 2001; Zamani, 2016). Despite the promotion of the natural environment, Blanchet-Cohen & Elliot (2011) and Sandseter (2009a) acknowledged that potential risky play opportunities will not be actualized if children are not allowed to use available features in the environment. Stephenson (2003) noticed within her observations of children's play, that children's natural propensity towards risky play was satisfied more through educator's attitudes than the equipment itself. For example, educators may be in conflict between safety regulations and their own evaluation of children's ability and capacity to calculate risks. Perceptions of and attitudes towards risk are subjective and become problematic when it involves decision-making and providing advice in what is permitted and what is restricted in the outdoor learning environment (Little, 2017). This calls for a rights-based approach

that considers educator's knowledge of the capabilities of the children and allows for decision-making on basis of this knowledge.

To provide risky play opportunities, suggestions for adequate playground equipment with calculated risks were made, including unfixed equipment (i.e. swing attachments, tyres, planks, ladders, boxes, ropes), variable elements (i.e. sand, soil, logs) in a varied landscape architecture (including stages, decks, flat and steep terrain). The focus of these suggestions is on providing a diverse environment with equipment that can be changed easily. This may offer consistently new challenges and stimulus for children's risky play. However, these suggestions are based on observations, mostly executed by only one researcher and therefore may not be reliable indications. Further evaluation and a risk-benefit assessment of these suggestions is required. Ball et al. (2008) provides a framework, which includes technical inspection of playground equipment to mitigate unnecessary harm and a descriptive risk-benefit assessment. Research on developmental benefits of risky play is scarce. Despite the theoretical indications for children gaining important coping skills for situations they previously have feared (Sandseter & Kennair, 2011), research using stronger research designs is needed to confirm these results and to explore further benefits. Gaining a greater understanding of the function of risky play and its developmental outcomes is important to provide a sufficient basis for risk-benefit assessments (Ball et al., 2008).

## **2.2. Educator practices**

Among the reviewed studies, educators showed different ways of responding and facilitating children's risky play. Prevention strategies included supervision of children's play, an adequate child-staff ratio and pre-determined safety measures (e.g. providing tapes on trees to determine the climbing height). Intervention strategies involved taking action in a risky situation by providing physical support, encouragement, instructions, restricting, constraining or redirecting the activity.

The supervision of children is one of the main tasks of educators in every childcare centre and may be more challenging the higher the number of children, who need to be supervised. Supervising a child from a close position in a risky situation may only be possible if other children will be supervised by other staff members. Thus, more staff would be needed to supervise in order to allow for risky play. Indeed, high staff ratios were identified as one

main factor that lead to risk minimisation in early childhood play contexts and subsequently to the reduction of risky play opportunities and/or physical play (Little & Wyver, 2008). However, more research needs to be conducted to investigate if a higher child-staff ratio would rather promote children's risky play (as continuous supervision would be guaranteed) or if it would reduce children's freedom to play (as children may experience more interferences by educators). Other factors such as educators' understanding and educators' priorities regarding risky play need to be considered as well. Identified pre-determined safety rules or measures, may work as individual solutions to make play safer, particularly if children cannot be supervised all the time. However, measures in the reviewed articles were only taken in nature-based childcare centres; thus, in an environment providing sufficient risky play opportunities. No examples have been made for other play spaces with more traditional or contemporary playground equipment.

If a risky situation occurs, educator's responses and actions can be visualised on a continuum between constraining the activity and allowing it without interacting. These educator decisions are influenced in their decision-making by several factors which have not yet been fully explored so far. One factor influencing practitioners in their decision-making was found to be gender. Sandseter (2014) revealed that male early childhood and education care practitioners appeared to have a more liberal attitude towards children's risky play activities compared to their female colleagues. They showed a tendency towards providing more opportunities for risky play and allowing children to take greater risks. However, no gender differences were found in terms of practitioner's concerns about children's safety when engaged in risky play activities. Both, female and male educator's promoted children's positive risk-taking. A likely explanation is that educators working in nature or outdoor-focused kindergarten may rather allow despite of restricting children's risky play (Sandseter, 2012). The attitude towards outdoor- and risky play is different in nature-based childcare centres compared to others, as they promote children's self-directed exploration of the natural environment and acknowledge the importance of balancing risk-taking and safety in play for children's development (Harper, 2017; Tremblay et al., 2015). This knowledge may be worth sharing - risk-reframing (suppressing own fears and limits and having a greater appreciating for risky play) can be achieved by training interventions for early childhood educators. Cevher-Kalburan (2015) conducted an intervention course over six weeks, aiming to change early childhood pre-service teachers' understanding of children's risky play. The course content included weekly classes, pedagogical readings and content-based explorations. Course assignments involved observations of children's outdoor play, interviews with teachers and

parents asking for their ideas about risky play and the exploration of characteristics on a playground to subsequently illustrate an imaginary playground that provides sufficient opportunities for risky play. Results of the data analysis indicate that the intervention was successful in changing the perspective on children's risky play in terms of a significant shift moving from avoiding risks to promote children's exploration of risky activities. However, the author notes that there is a difference between having a positive attitude or belief towards risky play and practising it in the real world. This may require further consideration in future studies.

### **2.3. Children's individual risk-management**

Studies of this category acknowledged children's individual risk-management strategies, including adequate risk perception and the individual adjustment of risks according to their skill level. In many cases, it may be reasonable to trust children's competence to complete a risky activity although this means to ignore own fears and limits. Children gain risk competence by perceiving risks and master these activities by taking risks on their own although this may involve failure. Despite the finding that 3 to 5-year old children are less able to appraise the outcome and severity of risky play activities (Little & Wyver, 2011), short-term interventions as it was conducted in the study by Lavrysen et al. (2017) to improve risk perception and competence skills need more critical consideration. It is unfortunate that information about the training content was scarce. Nevertheless, providing children with risky activities instructed by an adult may omit children's own exploration of the play-space and its own perception of what is risky and what is not. For instance, within Sandseter's (2007a) interviews with children and employees, some categories of risky play were perceived as risky by both children and staff, such as play in great heights, with high speed and rough-and-tumble play. Others, such as the usage of dangerous tools or play with dangerous elements was perceived as risky solely by staff and the danger of disappearing or getting lost only by children. Further, it is unknown if such training would result in a decreased number of injuries at the playground. Moreover, after the instruction of a 'risky' activity and gain of competence skills, children may choose to vary the activity to increase thrill and excitement (Sandseter, 2010). Testing possibilities of their actions and walking on the edge of their physical and mental boundaries through play derives from children's natural drive for risky play

and curiosity for their environment (Sandseter, 2010; Stephenson, 2003). Therefore, variation of an already risky activity may increase the risk of physical injury and miss the aim of the training.

### **3. Limitations and future studies**

This systematic review is subject to limitations. First, selected search terms resulted in articles, which primarily promoted children's risky play. Adding search terms such as 'safety' or 'risk-management' would potentially have led to the inclusion of literature from the injury prevention area and subsequently would have yielded in a broader result and a more holistic picture of dealing with children's risky play. Second, the quality assessment tool was designed for qualitative studies, which was applicable for most of the studies. Three studies used different research designs (i.e. ethnographic design, review) and therefore some questions were not applicable. Subsequently, a final score could not be calculated. However, this did not influence the usefulness of these studies for the purpose of this review. Third, this topic allowed the inclusion of only a small number of studies resulting in a limited but versatile overview of approaches that helped to approach this issue. Used research designs were appropriate for the purpose of the respective studies; however as most of the studies were qualitative, including observations and interviews of small sample sizes, there is potential bias from the selection of study population. These individuals may not be representative for the target population. Quantitative literature involving larger sample sizes may provide further insight into children's risky play and its implications for child's safety. Further research questions that derived from discussion include:

- What are developmental benefits of risky play?
- What are implications of high child-staff-ratios for children's risky play?
- Which factors influence educator's decision-making concerning children's risky play?
- Are training sessions effective for educator's and childcare authorities to gain knowledge of dealing with children's risky play? What are implications of these training sessions for children's risky play?
- Are interventions to improve risk perception and competence skills in children useful to facilitate risky play?

#### **4. Conclusion**

The purpose of the current study was to provide an overview of existing approaches and solutions to determine a balance between children's risky play and safety. Analysis of the reviewed articles resulted in three emerging themes, including: environmental approaches, educator's practices and children's individual risk-management. The evidence of this study suggests that a natural play space at childcare is an adequate environment for children's risky play. Suggestions for playground equipment providing 'manageable' challenges for children have been made including little fixed equipment, variable elements (i.e. sand, soil) and low climbing features (i.e. low trees, logs). Educator practices consisted of preventive strategies, including supervision, adequate staff-child ratio and pre-determined safety rules as well as intervention strategies (in a risky situation), including physical support, encouragement, instructions and safety reminders and restricting, constraining or redirecting the activity. Children's own risk-management was mentioned in few studies and characterised by risk perception and adjustment of risky activities according to the individual skill level (e.g. cautiously climbing down to descend height instead of jumping). Children are able to perceive the risk but are less able to appraise the possibility of a negative outcome. Overall, this study strengthens the idea that a stimulating, preferably a natural environment, provides adequate opportunities for children's risky play and that educator's decisions are decisive in actualizing these opportunities. Deriving from data analysis, future research questions have been outlined. This will offer researchers and practitioners a useful foundation to develop new ideas or carry forward existing approaches.

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### **Declaration of academic honesty**

Hereby, I declare that I have composed the presented master thesis independently on my own and without any other resource than the ones indicated. All thoughts taken directly or indirectly from external sources are properly denoted as such.

Hamburg, 18/09/2018

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## Appendix

### 1. Summary of data extraction

Table 10: Summary of data extraction (long)

Author (year)	Objective(s)	Location	Sample	Research design	Assessment method	Approaches	Theme(s)
Blanchet-Cohen & Elliot (2011)	Examining how educators mediate outside re-strictions on children's play	CAN	n=4 early childhood programs (total number of children n.i.)	Qualitative	Observations and focus groups	<ul style="list-style-type: none"> <li>- Supervision (from distance if less risky, closer if risky);</li> <li>- Awareness of risks but trusting children's abilities to manage risk-taking (e.g. when jumping off a rock)</li> <li>- Redirecting activity (e.g. breaking jump in several stages to reduce level of height;</li> <li>- Safety reminder: staying in eyesight</li> </ul>	Educator practices

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Brown & Kaye (2017)	Examining the role of early education care in advocating and providing nature play in an era where children's exposure to nature play and risks is threatened	USA	n.a.*	Qualitative	Ethnography	<ul style="list-style-type: none"> <li>- Schoolyard is an appropriate setting for children's positive risk-taking experiences</li> <li>- Promoting nature as ideal environment for children's risk-taking (examples: forest schools)</li> <li>- Teacher plays key role in allowing risky play to occur</li> </ul>	The physical environment
Brussoni et al. (2012)	Exploring the relationship between child development, play, and conceptions of risk taking with the aim of informing child injury prevention	CAN	n.i.*	Qualitative	Review	<ul style="list-style-type: none"> <li>- Providing an environment which is "safe as necessary, not as safe as possible" (p. 3134)</li> <li>- Focusing on eliminating hazards instead of risks</li> <li>- Promoting children's need to manage risks according to age and ability</li> </ul>	The physical environment

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Coe (2017)	Exploring the safe risk-taking and risky play experiences of four children at a nature-based early years program in rural Ontario	CAN	n= 1 educator n=4 children (4-5 years; 50% female)	Qualitative	Observations, semi-structured interviews, photo elicitation	<ul style="list-style-type: none"> <li>- If children did not feel comfortable in great height, they chose to carefully slide or climb down</li> <li>- Children approached risky activities differently (differences in confidence and eagerness; awareness of physical capabilities)</li> <li>- Using of dangerous tools – access only under supervision</li> <li>- Playing at frozen creek or fire pit – children adhered to pre-established rules, safety reminders given by educators</li> <li>- Redirection of rough-and-tumble play in safer direction without restricting it</li> <li>- Hazard-reduced play possible by teacher’s attentiveness, children’s self-awareness and peer attentiveness (e.g. helping each other to stay safe)</li> <li>- Environmental safety check points along trails</li> <li>- Sufficient teacher-child ratio (1:6)</li> </ul>	Children’s ind. risk-management / educator practices
Little (2017)	Investigating outdoor play provision in terms of space, resources and planning for risk-taking in play	AUS	n=245 early childhood education centres (ECE) in Australia	Mixed-method	Online questionnaire (qualitative analysis of open-ended questions)	<ul style="list-style-type: none"> <li>- ‘managed’ risks – boulders for climbing, low climbing trees, uneven paths, stages, decks, logs, ropes, sand (variable elements), having little fixed equipment to provide a dynamic environment</li> </ul>	The physical environment

Little & Sweller (2015)	Investigating outdoor play provision in terms of resources, space and affordances for physical activity and risk-taking in play	AUS	n=245 ECE centres in Australia	Mixed-method	Online questionnaire (qualitative analysis of open-ended questions)	<ul style="list-style-type: none"> <li>- Rough and tumble play was always permitted by 19.3% of centres, most of the time by 33.3%.</li> <li>- Tree climbing was NOT permitted in 47.2% of centres, 14.9% allowed tree climbing most of the time and 12.8% always allowed the activity.</li> <li>- Climbing equipment: Majority of centres (36.2%) allowed a maximum climbing height of 0.5-1.0m, 31.2% allowed children heights of 1.-1.5m, 21.4% of centres allowed children to climb heights of more than 1.5m and 10.3% restricted climbing to heights of 0.5m or less.</li> </ul>	Educator practices
Little & Wyver (2008)	Examining the current status of outdoor play in urbanised, western societies such as Australia and providing critical analysis of the literature to present an argument for the inclusion of positive risk-taking experiences in children's outdoor play	AUS	n.a.*	Qualitative	Narrative review	<ul style="list-style-type: none"> <li>- Promoting risk-taking by maintaining safety for children</li> <li>- Advocating for adequate staff-child ratios to ensure consistent supervision of children's physical play (high staff-child ratio leads to minimisation of risks)</li> </ul>	Educator practices

Little et al. (2011)	Investigating adult attitudes towards risk-taking and whether children's experiences of risky play differ according to the contexts in which the play takes place	AUS	n= 28 children (aged 4-5 years; 9 females) of five participating ECEC	Qualitative	Semi-structured interviews and naturalistic observations	- Supporting children to engage in risky activity through physical support, encouragement and instructions that help to master the activity	Educator practices
McClain & Vandermaas-Peeler (2016)	Examining the ways in which natural environments influenced pre-schooler's physical and socioemotional development	USA	n= 11 (aged 3-5 years, 6 female)	Qualitative	Observations, interviews	- Pre-arranged stopping points along trail to give children the opportunity to climb or jump off rocks; also served as a measurement to wait for the rest of the group - Natural environments provide adequate affordances for risky play - Nature at river was wilder and children faced more challenges compared to the environment at the creek; children were supportive for their peers in terms of helping each other	The physical environment / educator practices
Sandseter (2009b)	Examining how preschool children seek out and manage risks in play and how preschool staff manages children's risk-taking in play	NO	n= 29 (aged 4-5 years; 21 females)	Qualitative	Observations (video)	- Children appeared to be aware of their level of competence and risk they are comfortable with (e.g. decided to refuse joining an activity to avoid risk in the play situation) - Educators strategies: restricting/constraining, supervision (keeping a close eye), contributing/initiative, redirecting activity (e.g. asking child to climb down to descend height; being less aggressive in rough-and-tumble play)	Children's individual risk-management / educator practices

Sandseter (2012)	Examining how EHEC practitioners perceive and value children's risk-taking in play in the kindergarten setting	NO	n=7 practitioner's (5 females) from two ECEC centres	Qualitative	Semi-structured interviews	<ul style="list-style-type: none"> <li>- Individual evaluation of each child's abilities (considering if there is a need for paying extra attention or restriction) in a risky situation</li> <li>- Allowing and supporting risky play by ignoring own fears and limits (Injuries are a natural part of children's play)</li> <li>- Using common sense (e.g. if children climb to high (6-7m) they ask them to come down)</li> </ul>	Educator practices / children's individual risk-management
Sandseter (2009a)	Exploring affordances for risky play in two different pre-school environments	NO	n=2 pre-schools	Qualitative	Observations and interviews	<ul style="list-style-type: none"> <li>- Both preschools offered risky play opportunities, but nature playground offered opportunities from all of Sandseter's categories of risky play</li> <li>- Risks higher on nature playground (higher trees, cliffs, rocky walls, big rocks, etc.)</li> <li>- Supervision and attentiveness, pre-established rules to avoid accidents and injuries in both schools</li> </ul>	The physical environment/ educator practices

Sandseter & Sando (2016)	Exploring how Norwegian early childhood education and care practitioners handle the increasing safety focus in Norwegian society	NO	n= 335 re-sponses (describing limitations in children's opportunities for physically active play)	Qualitative	online questionnaire (analysis of open-ended questions)	<ul style="list-style-type: none"> <li>- Tree climbing was either restricted, only permitted when supervised by adult, after the demonstration of competence in climbing or only up to a certain height</li> <li>- Balancing only permitted when there is deep snow (soft surface)</li> <li>- Avoidance of playing with ropes due to danger of strangulation</li> <li>- No trips to places with water access (insufficient staff-child ratio)</li> </ul>	Educator practices
Stephenson (2003)	Identifying acceptable physical challenges for 4-years old's  Examining how we can juggle the need for challenge with the increasingly restrictive safety requirements	NZ	n.i.*	Qualitative	Ethnography	<ul style="list-style-type: none"> <li>- Acceptable physical challenging opportunities: <ul style="list-style-type: none"> <li>- a range of swing attachments (regularly changed)</li> <li>- heavy loose materials such as tyres, planks, ladders and boxed (experiences in testing strength)</li> <li>- materials to construct (having responsibility)</li> <li>- ropes (opportunity to climb up or down, swinging from one side to the other)</li> <li>- steep terrain (opportunities for climbing and sliding, digging tracks and steps)</li> <li>- digging area in soil</li> </ul> </li> </ul>	The physical environment



Waters & Begley (2007)	Examining risk-taking behaviours displayed by four-year-old children in two different play spaces	UK	n=2 (aged 4-5 years)	Qualitative	Natural-istic observations	<ul style="list-style-type: none"> <li>- Children displayed various risk-taking behaviours in the forest school, but not at the school playground.</li> <li>- Despite differences in pre-existing tendencies towards risk-taking, both children had learning experiences at the forest school</li> </ul>	Children's individual risk-management/ the physical environment
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## **2. Quality assessment adapted from Lorenc et al. (2014)**

### **1. Abstract and title. Did they provide a clear description of the study?**

Good: structured abstract with full information and clear title.

Fair: abstract with most of the information.

Poor: inadequate abstract.

Very poor: no abstract.

### **2. Introduction and aims. Was there a good background section and clear statement of the aims of the research?**

Good: full but concise background to discussion/study containing up-to-date literature review and highlighting gaps in knowledge; clear statement of aim AND objectives including research questions.

Fair: some background and literature review; research questions outlined.

Poor: some background but no aim/objectives/questions OR aims/objectives but inadequate background.

Very poor: no mention of aims/objectives; no background or literature review.

### **3. Method and data. Is the method appropriate and clearly explained?**

Good: method is appropriate and described clearly (e.g. questionnaires included); clear details of the data collection and recording.

Fair: method appropriate, description could be better; data described.

Poor: questionable whether method is appropriate; method described inadequately; little description of data.

Very poor: no mention of method AND/OR method inappropriate AND/OR no details of data.

**4. Sampling. Was the sampling strategy appropriate to address the aims?**

Good: details (age/gender/race/context) of who was studied and how they were recruited and why this group was targeted; the sample size was justified for the study; response rates shown and explained.

Fair: sample size justified; most information given but some missing.

Poor: sampling mentioned but few descriptive details.

Very poor: no details of sample.

**5. Data analysis. Was the description of the data analysis sufficiently rigorous?**

Good: clear description of how analysis was carried out; description of how themes derived/respondent validation or triangulation.

Fair: descriptive discussion of analysis.

Poor: minimal details about analysis.

Very poor: no discussion of analysis.

**6. Ethics and bias. Have ethical issues been addressed and has necessary ethical approval been gained? Has the relationship between researchers and participants been adequately considered?**

Good: ethics: when necessary, issues of confidentiality, sensitivity and consent were addressed; bias: researcher was reflexive and/or aware of own bias.

Fair: lip service was paid to above (i.e. these issues were acknowledged).

Poor: brief mention of issues.

Very poor: no mention of issues.

**7. Results. Is there a clear statement of the findings?**

Good: findings explicit, easy to understand and in logical progression; tables, if present, are explained in text; results relate directly to aims; sufficient data are presented to support findings.

Fair: findings mentioned but more explanation could be given; data presented relate directly to results.

Poor: findings presented haphazardly, not explained and do not progress logically from results.

Very poor: findings not mentioned or do not relate to aims.

**8. Transferability or generalisability. Are the findings of this study transferable (generalisable) to a wider population?**

Good: context and setting of the study are described sufficiently to allow comparison with other contexts and settings, plus high score in Q4 (sampling).

Fair: some context and setting described but more needed to replicate or compare the study with others, plus fair score or higher in Q4.

Poor: minimal description of context/setting.

Very poor: no description of context/setting.

**9. Implications and usefulness. How important are these findings to policy and practice?**

Good: contributes something new and/or different in terms of understanding/insight or perspective; suggests ideas for further research; suggests implications for policy and/or practice.

Fair: two of the above.

Poor: only one of the above.

Very poor: none of the above.