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Places to play outdoors: Sedentary and safe or active and risky?

Shirley Wyver
Macquarie University

Paul Tranter
University of New South Wales

Ellen Sandseter
Queen Maud University College

Geraldine A. Naughton
Australian Catholic University

Helen Little
Macquarie University

See next page for additional authors

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Abstract

For more than a decade there has been growing concern about global reductions in physical activity and increases in sedentary behaviours. Initially, it was unclear whether children would be protected from this trend. Perhaps children's playfulness and associated activity levels would act as a protective factor. There is now compelling evidence that children's activity levels are quite sensitive to environmental factors. For example, a recent US study of activity levels in preschoolers concluded that "...the characteristics of the school have a much greater influence on a child's activity level while in school than do the child's personal demographic characteristics" (Pate et al. 2004). There is also clear evidence that children's freedom to engage in active play, particularly outdoors, has diminished over the last generation (Clements, 2004). In this chapter, we examine some of the factors in young children's environments that influence levels of physical activity. Our main focus is on the physical characteristics of formal child care environments and to a lesser extent, school playgrounds. We examine the role of time, space, loose objects, risk-taking/ safety and outdoor pedagogy in the context of children's play environments.

Keywords

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CHAPTER SIX

PLACES TO PLAY OUTDOORS: SEDENTARY AND SAFE OR ACTIVE AND RISKY?

SHIRLEY WYVER, PAUL TRANTER, ELLEN BEATE HANSEN SANDSETER, GERALDINE NAUGHTON, HELEN LITTLE, ANITA BUNDY, JO RAGEN AND LINA ENGELEN

For more than a decade there has been growing concern about global reductions in physical activity and increases in sedentary behaviours. Initially, it was unclear whether children would be protected from this trend. Perhaps children's playfulness and associated activity levels would act as a protective factor. There is now compelling evidence that children's activity levels are quite sensitive to environmental factors. For example, a recent US study of activity levels in preschoolers concluded that "...the characteristics of the school have a much greater influence on a child's activity level while in school than do the child's personal demographic characteristics" (Pate et al. 2004). There is also clear evidence that children's freedom to engage in active play, particularly outdoors, has diminished over the last generation (Clements, 2004). In this chapter, we examine some of the factors in young children's environments that influence levels of physical activity. Our main focus is on the physical characteristics of formal child care environments and to a lesser extent, school playgrounds. We examine the role of time, space, loose objects, risk-taking/safety and outdoor pedagogy in the context of children's play environments.

Until the latter part of the last century, research on play had focused on building a knowledge base of the unique role of play in the development of cognitive, linguistic, social abilities (see Bergen 2002, Pellegrini 2009;

Rubin, Fein, and Vandenberg 1983). The importance of play became recognised as a fundamental right for young children (UNICEF, 2006). Although researchers have continued these lines of investigation, attention has been redirected towards a battle to maintain adequate levels of play (e.g. Pellegrini 2006). Much of the recent interest in children's outdoor play has been motivated by alarming changes in children's health and predictions of their health status as adults. Chronic illnesses such as obesity and Type II diabetes are on the increase in many developed and developing countries (Stanley, Richardson, and Prior 2005; Jeffery and Sherwood 2008). Inactivity in early childhood is linked to poor outcomes in body fatness in late childhood (Moore et al. 2003) and early onset of childhood obesity is a strong predictor of obesity later in life (Magarey et al. 2003) It seems likely that these illnesses are the more obvious signs of an escalating constellation of physical and psychological problems affecting young children today, all of which could be at least partially reversed with adequate resourcing of outdoor play opportunities (see Ginsburg 2007).

Although our focus is on physical activity, it is important to note that the amount of time spent in sedentary behaviour is equally significant for health outcomes, and these behaviours seem to differ for boys and girls (te Velde et al. 2007). Variations in children's behaviours are of particular significance when interventions are introduced to enhance physical activity or reduce sedentary behaviour. It is essential that these interventions do not inadvertently interrupt other aspects of children's behaviour that may be developmentally important. For example, interventions that are highly directive may not offer the opportunities for social and cognitive problem-solving found in more "playful" contexts and may fail to capture children's intrinsic motivations. Schools and child care have been identified as important settings for children's physical activity (Story, Kaphingst, and French 2006a, 2006b; Reilly 2010; Ward et al. 2010). Although some have argued for greater regulatory requirements to increase time spent in physical activity in child care (Story et al. 2006a), teacher characteristics may be more important. Teacher education levels correlate positively with physical activity in child care and, as will be discussed below, pedagogy is important and can be diminished by regulatory requirements. It is also important that teachers have measures to for assessing environments for adequacy of provision of physical activity (see Ward et al. 2008).

Definitions, Measures and Methods

In this chapter, we define play as a transaction that is relatively intrinsically motivated, internally controlled and free from unnecessary constraints of reality (Skard & Bundy 2008). Physical activity is inclusive of all daily opportunities for movement, such as unstructured play, organised activities (swim class, dance), and active transport to and from destinations (walking, riding bicycles) and sedentary behaviour is characterised by times spent using minimal energy expenditure such as viewing television and other electronic screens, time in passive transport and prolonged amounts of time spent stationary rather than moving. Child health advocates call for a balance between active and not-so-active opportunities during a child's day. Intervention refers to any planned change that occurs in the child's environment. In most of the studies cited this has involved a change in the physical environment or programming. A recent review of the links between childcare policies, preschool environments, physical activity and sedentary behavior concluded intervention studies targeting these factors were warranted (Trost, Ward, and Senso 2010).

The studies we cite examine correlations or associations between factors in early childhood environments and physical activity, with some involving experimental designs. None of the studies cited meets criteria to make claims about causality (see Bauman et al. 2002). Although we draw a distinction between play and physical activity, it is important to note that most of the studies discussed below do not make this distinction. Most studies assume that when children are engaged in physical activity, they are playing. This assumption is often made because, while it is conceptually easy to differentiate play and physical activity, empirically it is an onerous task for which currently available measurement and coding schemes are not well designed. Children are more likely to be physically active when outdoors (see Hinkley et al. 2008) and physical activity typically occurs during outdoor play (Sallis, Prochaska, and Taylor 2000) particularly natural environments (see Fjørtoft 2001). Outdoor play has a significant role in all areas of development: physical, cognitive, social and emotional (e.g. see Pellegrini 2006).

Throughout this chapter, we refer to children's physical activity levels including the way in which physical activity was measured in each study. Some of the common measures involve use of devices (accelerometers, pedometers) or observation. As can be seen from the photo of a child wearing an accelerometer (Figure 1), the devices used in measuring

children's activity levels are often small and relatively non-intrusive. Children participating in research can play freely without being directly observed. Nonetheless, most researchers do not rely solely on these instruments and include some direct observations, questionnaires for children, parents and teachers, and other instruments to provide a more comprehensive picture of the quality and context of physical activity. When reading these studies, it is important to keep in mind that measurement of young children's physical activity levels is still in its early stages. All measures have limitations. For example, accelerometry, which is often considered the best form of currently available measurement, is a measure of quantity, not quality of movement. Accelerometry has poor detection of some movements, such as those that are non-weight bearing (Pfeiffer et al. 2006) and has been found to have large error rates occur for some outdoor activities such as swinging (Storli and Hagen 2010). Despite these difficulties, it has been found to be a valid measure of children's physical activity and correlates positively with more accurate, but more intrusive measures of metabolic measures (Pfeiffer et al).

Figure 1: An accelerometer worn by a child

Outdoor Play as a Context for Physical Activity

Our focus is on opportunities for outdoor play in child care and school contexts. However, it is important to note that erosions of opportunities for children to engage in outdoor play has occurred in all contexts in which children regularly participate (Clements 2004; Wyver et al. 2010). Elsewhere, we have discussed the multiple contexts in which erosions to opportunities for play have occurred (Bundy et al. 2009; Tranter and Malone 2004). We have contrasted the play environments in Australia, UK and US with Scandinavian countries such as Norway, in which high levels of outdoor play continue, to demonstrate that sacrifices in quality and quantity of play are not just an unfortunate by-product of life in a modern Western society (Wyver et al. 2010). Reduction in opportunities for play relate directly to a devaluing of play in society as reflected particularly in school curricula, aggressive marketing to parents of educational toys and programs (Ginsburg 2007), excessive concerns about safety (Franklin and Cromby 2009; Gill, 2007) and urban planning that is not child friendly (Sharpe and Tranter 2010).

Significant adults, such as parents and teachers, have an important role in ensuring children have access to environments that enable adequate daily physical activity and do not encourage excessive sedentary behaviours. Unfortunately, adults do not necessarily recognise problems when they exist. For example, a significant proportion of mothers fail to notice that their child is overweight (Baughcum et al. 2000). There is also evidence of low levels of awareness of physical activity guidelines among parents of young children and early childhood teachers (Dwyer et al. 2008) and there seems to be poor community understanding of the importance of physical activity in young children's lives. A recent community survey conducted in Melbourne (Australia) revealed that most adults did not rate environmental factors (e.g. places to walk and cycle) as important in prevention of obesity in children. Respondents recognised the role of multiple factors in childhood obesity and demonstrated awareness of problems associated with consumption of certain food types and exposure to related advertising, yet only 27% of adults rated out-of-school physical activity as having an extremely important role in obesity prevention, and even less (19%) considered in-school physical activity to be important (Hardus et al. 2003).

Space, Time, Objects and Affordances

Much of the research examining the relationships between space, time, objects and physical activity or play has contributed to an understanding of the statistical relationships between environmental features and children's behaviour (e.g. examining increases or decreases in children's activity in relation to square metres of space available). This type of research is the main evidence used in this chapter to discuss the relationship between outdoor play environments and physical activity. Investigation of statistical relationships has been essential in revealing how modifications in the environment are associated with changes in physical activity. In some studies, these environmental factors have been manipulated in experimental designs. These studies not only provide a high standard of scientific evidence, but also demonstrate that small, inexpensive changes in outdoor play environments can often lead to significant changes in physical activity.

Although we consider the statistical evidence to be foundational in understanding the relationship between outdoor play and physical activity, it does not capture all aspects of the relationship. Researchers have also attempted to examine the environment from the child's perspective. These studies have included a range of methods from quasi-experimental to ethnographic designs. Some of the most interesting work has come from European countries in which children's outdoor play in formal schooling involves engaging with nature. In these contexts, children encounter a wide range of terrains, natural loose objects and animals (e.g. see Waller 2010; Waters and Maynard 2010).

A theoretical approach currently used by many Scandinavian researchers investigating outdoor play is based on Gibsonian perceptual theory – particularly the idea of affordances. Affordances were originally described by Gibson (1977) as the combined properties of surface and substance relative to an individual. Affordances differ depending on an individual's characteristics such as height, age and experience in the environment. For example, a small tree may afford climbing for a young child, but not for an infant or large adult. Developments of Gibson's work by Kyttä (2002, 2004) and Heft's (1988) taxonomy have been important in enabling these researchers to test hypotheses relating to affordances and the natural environment (e.g. Sandseter 2009). Kyttä (2004) distinguished between *potential* and *actualised affordances*. Potential affordances are those that are available to the individual, while actualised affordances are those that

the individual perceives, acts on and modifies. Although potential affordances may remain the same, actualised affordance will vary depending on children's individual characteristics (Niklasson and Sandberg 2010). Actualised affordances change with children's physical development and experience in the environment. Potential affordances also change, such as when ground conditions alter during different seasons (Storli and Hagen 2010).

Time

It seems self-evident that time spent outdoors is critical in ensuring children can engage in levels of physical activity. Recommendations for *minimum* amounts of moderate (equivalent to brisk walking level) and vigorous (huff-puff level) physical activities (MVPA) and sedentary periods are usually presented as amount of time per day. For example, in Australia the current recommendations for daily MVPA are for three hours per day for children between 1 to 5 years and one hour per day for children aged 5 to 12 years (Australian Government, Department of Health and Ageing, 2010). Sedentary episodes should not exceed 60 minutes of preschoolers non-sleep time (National Association of Sport and Physical Education). Cardon et al. (2008) used pedometers to investigate physical activity during outdoor play of 4 to 5 year olds from 39 Belgian public preschools (783 participants in total). Step counts per minute were higher for shorter durations of outdoor play, but overall physical activity was greater for longer durations of outdoor play. The authors note that there can be an initial burst of activity when children go outdoors, but this is followed by activity reduction, possibly due to fatigue or boredom. Findings such as these highlight that the amount of time offered for outdoor play to preschoolers should exceed the minimum recommended time for play. Young children engage in short bursts of MVPA rather than sustained periods of MVPA which are characteristic of adults and older children (Burdette, Whitaker, and Daniels 2004).

Space

A range of recent studies have examined the relationship between amount of space available and physical activity. Some studies also include analyses of the relationship between space and sedentary behaviour. In these studies, space is usually defined as the total square metres of outdoor playground space available to all children and/or the number of square metres available per child (an estimate based on the total square metres of

outdoor playground divided by the number of children present at the time of observation). However, the estimate is based on horizontal space, not vertical space (e.g. does not include availability of trees to climb).

Numerous studies have found a relationship between the amount of physical activity and space (usually measured by square metres of available ground surface) available per child or overall (Trost, Ward, and Senso 2010). Space remains an important predictor of physical activity and sedentary behaviour in 9-10 year-olds. Ridgers, Fairclough, and Stratton (2010) conducted observations of recess play behaviour in English schools. They used accelerometry to record physical activity. Space available in playgrounds was between 1637.1 and 2392.9 m^2 (4.6-13.8 m^2 per child). Space available per child was found to be positively associated with physical activity and negatively associated with sedentary behaviour. Other predictors in this study were gender (girls engaged in more sedentary behaviours, boys in more vigorous activity), equipment (presence of playground equipment was positively associated with vigorous activity) and temperature (higher temperatures were negatively associated with vigorous activity). Bolderman et al. (2006) classified 11 Swedish preschool outdoor play areas as small (<2000 m^2), medium (2000-6000 m^2) and large (>6000 m^2). They also examined other features of the environment, such as presence of vegetation, to classify sites as either high or low. Pedometers were used to measure activity levels (step counts). Step counts in environments with a rating of "high" were approximately 20% greater than in environments with a low rating. Cardon et al. (2008) found a significant relationship between the number of children per square metre and step count (a higher step count was recorded in centres where there were fewer children per square metre).

Studies of space in outdoor play environments cannot be considered conclusive. While the outdoor play areas studied vary in terms of size, there were other factors that varied (e.g. vegetation as noted in the Bolderman et al. research). It is also possible that there are differences in the characteristics of people selecting these environments. For example, larger environments may be more likely to be selected by parents and/or staff who value physical activity. More research is needed to determine the extent to which other factors might contribute to the relationship between activity level and space. The current evidence, however, does indicate that space is of importance when planning outdoor environments for children.

In New South Wales (Australia), the current minimum space permitted per child in 0-5 settings is 7m^2 (Community Services). Other Australian states have also adopted the same minimum permitted outdoor space (see for example, Department of Education and Early Childhood Development). Currently, there are no published data on the actual size of outdoor playgrounds in New South Wales centres. The minimum size is well below the average of 47 m^2 in Norwegian preschools (average outdoor area 2600 m^2) (Moser and Martinsen 2010a). When asked about the Norwegian specification for minimum space per child, Thomas Moser responded that the Ministry decided against specifying a minimum as this may lead to reduction in outdoor playground sizes (Moser and Martinsen 2010b).

Increasing outdoor space in established child care centres may be a difficult proposition due to lack of availability of additional space and cost of purchasing space if it is available. Excursions offer one possibility for extending space and can have an important role in connecting children with communities. Higher activity levels have been found in children attending centres that offer four or more excursions per month (Dowdaet al. 2004) although it should be noted that teacher qualification related positively to child activity levels and number of excursions in this study. In NSW, regulations for personnel and other requirements for excursions seem, anecdotally, to inhibit willingness of many child care staff to include regular excursions. The issue of onerous regulatory requirements as a barrier to excursions was also raised in the van Zandvoort et al. (2010) Canadian study. Revisions of these regulations should take into consideration the importance of excursions in extending children's access to outdoor space. Likewise, revisions to restrictions of heights for climbing (currently 1.5m for supervised early childhood settings - Standards Australia) could contribute to the overall space available to children. As noted in our later section on *risk-taking, regulation and surplus safety* there are significant pressures to maintain "safe" environments for children.

Loose Objects

Studies that have used number of objects as an independent variable have not found such objects to be an important influence in children's physical activity (Baughcum et al. 2000). When the characteristics of objects are examined, different findings emerge.

Hannon and Brown (2008) found that loose objects, identifiable as play equipment (e.g. hoops, bean bags, tunnels), when introduced to a preschool playground, led to an increase in light, moderate and vigorous physical activity. These objects were introduced in a free play context and the authors noted that a change in the play environment could be introduced with minimum expense. A Sydney-based playground intervention involved introduction of large loose objects, not readily identifiable as play objects (e.g. car tyres, hay bales, barrels) to school playgrounds. Significant increases in physical activity and playfulness were observed after the introduction of the equipment (Bundy et al 2009a; Bundy et al. 2009b). Both studies used a single group pretest-posttest design to examine changes associated with the introduction of loose parts, and used accelerometry to assess physical activity. While these findings are promising, lack of a control group in the designs means that it is not possible to exclude a range of competing explanations for the changes observed in physical activity and play (e.g. these changes may have occurred due to changes in children's maturity or changes in season). The authors of the Sydney study are currently engaged in a cluster randomised control trial (known as the Sydney Playground Project) to further investigate the influence of the introduction of loose parts to physical activity and play in school playgrounds.

One interesting observation from the Sydney Playground Project is the selection of light and heavy loose materials. The researchers intentionally selected a range of weights to be used in the playground. Some teachers rejected objects that were too heavy for young children to lift, ignoring the potential for children to recruit involvement of peers. Fortunately teachers were persuaded by the researchers to try these objects and monitor children's responses. Initial observations indicate that the heavier objects have been popular with children and have encouraged cooperative play, as children need to recruit peers in order to play with the heavier objects. Figure 2 shows an example of the cooperative play with loose materials in the Sydney Playground Project.

Competition for objects and maintenance has been reported as a problem in childcare. This can include insufficient numbers of preferred objects, or some objects being underutilised due to dilapidation can act as a barrier to physical play (van Zandvoort et al. 2010). There is some evidence that such barriers are unlikely to exist in natural playgrounds. For example, a recent German study compared the behaviours of the same group of preschoolers in contemporary (childcare) and natural play areas.

Observational records of children's behaviour revealed that children spent time queuing for equipment in the contemporary playground, but did not engage in this type of idle time when in the natural outdoor setting (Luchs and Fikus 2010). Similarly, Cardon et al. (2008) speculated that their finding of a lack of relationship between availability of equipment (loose and fixed) and physical activity was due to children often standing in line waiting to use equipment.

Figure 2: An example of play with loose materials from the Sydney Playground Project

Risk-taking, Regulation and Surplus Safety

Adults can generally choose between activities that are perceived as high or low risk. There are also opportunities for adults to access qualified instructors to help them learn new physical skills that might enhance career or recreation opportunities. For many children, the analogous option in child care or schools is denied. Although outdoor playgrounds in child care and schools are supervised by staff trained in helping children learn new skills (and have first aid training if something goes wrong) and include peers who can also offer support, in many countries risky activities are prohibited in these contexts. Children have the options of giving up on

the idea of engaging in risky behaviour or taking covert risks (risk compensation). Three Australian studies are informative in this respect. Each of these studies reports on interviews or focus groups conducted with teachers based in Sydney. The first was based in middle SES childcare centres. A key finding was the regulatory environment of the early childhood centres inhibited teachers' provision of sufficiently challenging outdoor play experiences for the children in their care. The teachers reported that this resulted in children seeking challenge, and at times inappropriate risk-taking in other areas of the physical environment (climbing fences, stacking large blocks to climb on) which then led to a greater need for monitoring and intervention to ensure children's safety (Little 2010). The second study recruited participants from lower SES childcare centres. The parents of children attending these centres were generally from non-English speaking backgrounds (mainly Middle Eastern and Chinese). The authors note that these groups were targeted because children from these backgrounds are at greater risk of obesity. Teachers reported regulatory requirements to be a barrier to physical activity, but also a generally overprotective attitude of parents. The latter point was reinforced in the parent focus groups which were also conducted in this study (Dwyer et al. 2008). The third is the school-based study by Bundy et al. (2008, 2009a) discussed in the previous section on loose and fixed objects. Teachers in this study noted that they had seen many positive changes in children's outdoor play behaviours following the play intervention. In particular, they commented on increased creativity and social interaction in outdoor play. Nonetheless, these teachers raised concerns about safety. Despite the fact that the number of reported injuries did not increase, the playground was perceived as less safe for children. In each of these studies, teachers considered their approaches to risk and safety as consistent with a societal trend towards increased (over)protection of children and/or related to regulatory requirements. They did not see their approaches as being based on pedagogical decision making. Indeed, teachers commented on concerns that low tolerance of risk taking has reduced valuable opportunities for early learning and reduced children's resilience. Although Australian studies have been used to highlight excessive concerns about safety in children's outdoor play, this phenomenon is not unique to Australia (e.g. see Gill 2007).

In recent decades a critical tension has developed between two essential considerations for children's health and well-being: physically active play and safety CCarver, Timperio, and Crawford 2008). "Risk anxiety" or "surplus safety" (Stephenson 2003; Buchanan 1999) has placed these two

goals in conflict; the balance has tipped squarely toward safety. "Risk anxious adults" seem to feel that any risk is too much risk and that unstructured physical play is unsafe (Thomson 2007; Thomson 2003). Surplus safety (Buchanan 1999), in the guise of risk assessment, has reduced the level of exciting, challenging and stimulating play in school grounds. Play spaces are now more commonly a reflection of what adults perceive as a safe environment than of the innate desires of children to have a stimulating and challenging play space.

> "If we work to keep the playground bland, safe and ring-fenced by rules, are we restricting children's opportunities to indulge in, and extend their understanding and appreciation of the world around them?" (Thomson 2007, 497).

Adults who restrict children's active play to keep them safe focus on one narrow set of dangers, to the exclusion of risks that arise *because of* restricted activity (Stephenson 2003). The long-term health benefits of play have been sacrificed in favor of the short-term health benefits of safety. This has created a number of social traps and a "downward spiral of fear" (Mullan 2003, 352). Yet, there will always be some risk of injury when children play.

Organised school activities potentially provide opportunities for children to be physically active (Jago and Baranowski 2004). However, many children fail to achieve energy expenditure targets because organised activities fail to yield the benefits of "risky", and hence "fun" and "challenging" active outdoor play. One to two hours can be a long time for young children. Very few structured activities are sufficiently *motivating* to engage them that long. A feedback loop is established, in which decreased motivation leads to decreased duration, which in turn leads to decreased activity and decreased energy expenditure. Structured activities may also reduce activity levels of some children. For example, Storli and Hagen (2010) reported low standard deviations on accelerometry measures when adult directed activities occurred. They interpreted this as indicative of increased activity levels for the less active children and reduced activity levels for the more active children. Teachers in Dwyer et al. (2010) expressed concern that too much emphasis on structured physical activity may diminish the creativity that should be part of children's play. A Norwegian study also found that play in challenging nature areas, opposed to play on structured playgrounds, showed clear differences in children's (5-7 years of age) physical- and motor competence after a 6 months

intervention. The children playing in challenging nature areas made a statistical significant progress on physical and motor competences such as balance, muscle strength, coordination, agility, and flexibility compared to the children playing on the structured playground (Fjørtoft, 2000). This is in accordance with a similar study among Swedish preschool children (Grahn et al. 1997). Another Norwegian study has also documented that play in challenging nature areas has a significant effect on children's spatial-orientation skills compared to play on ordinary structured playgrounds (Fiskum 2004).

There is a growing awareness of the importance of everyday risk-taking for children (Mayes and Chittenden 2001). In some areas, particularly in Norway and Japan, school grounds are being designed in ways that encourage risk-taking and challenging play. In some Japanese kindergartens, playgrounds have high wooden beams and walls for climbing. In Norway, there is a realisation that being afraid to use the body actively poses a much greater risk than play equipment (Steinsvik 2004). Sandseter's (2009, 2010) research demonstrates the importance of context and pedagogy in young children's risky play. Many of the play categories developed by Sandseter (2007a, 2007b) are unlikely to be observed in childcare in countries such as Australia. These categories are: play at great heights, play at high speed, play with dangerous elements, rough-and-tumble, and play in which children disappear from adult view. Examples of outdoor play in a Norwegian preschool is shown in Figures 3 and 4. It is important to note that the Norwegian approach to risk-taking is part of a broader pedagogical approach to children's learning. The approach to learning that occurs in the outdoor preschools involves a different approach to interacting with the environment and attracts different types of staff. For example, Emilsen and Lysklett (2008) report that more males are attracted to teaching in these preschools than in traditional preschools.

In a Norwegian study on childhood accidents, Boyesen (1997) found that an exaggerated focus on safety regulations and prohibition of risky play and activities among children were not useful as injury prevention strategies. Rather, Boyesen states that only through children learning how to master risks themselves will injury prevention be successful. This means that in order for a child to "learn" how to master a risk situation, s/he will necessarily need to somehow approach the situation, and thereby increase the risk.

Figure 3: Norwegian preschool children climbing a rock wall on one of their weekly hikes out in nature areas

Figure 4: Norwegian preschool children taking part in building a climbing tower of logs and branches

Resources

Researchers and practitioners interested in outdoor play have developed a range of resources to disseminate research findings and ideas. The following is a list of some of the internet resources and organisations recommended by the authors of this chapter.

- Sydney Playground Project
http://sydney.edu.au/health_sciences/sydney_playground_project
- EECERA Outdoor Play and Learning Special Interest Group
http://sites.google.com/site/outdoorplaylearning/Home/archive
- PRAV http://www.prav.asn.au/
- International Play Association (IPA) http://ipaworld.org/
- IPA/USA http://www.ipausa.org/

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