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## Characteristics of risky play

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This article explores what makes children's risky play risky. Risky play can generally be defined as thrilling and exciting forms of play that involve a risk of physical injury. Few, if any, studies have been conducted to explore what identifies play activity as risky. The present study aims to determine what characteristics to judge risky play by. Risky play in two Norwegian preschools was observed and videotaped during 18 observation days over five months. The results reveal two categories of risk characteristics in children's play: 1) environmental characteristics (features of the play environment), and 2) individual characteristics (how the play was carried out by the child). These two categories include several different risk characteristics that identify the risk in risky play. The results indicate that both features of the play environment as well as children's risk-taking actions based on their subjective risk perception influence the objective risk present in the play situation. The study contributes to an increased focus on children's natural urge for risky play, and to what characterizes such play.

### Introduction

The definition of human play in general is a debated and not yet concluded discussion (Bishop & Curtis, 2001; Jenvey, 2002; P. K. Smith & Vollstedt, 1985), and there have been difficulties involved in documenting and categorizing children's games and play (Blatchford, Creaser, & Mooney, 1990). The debate include both how to define play using several criteria to distinguish play from no play, and criteria for distinguishing different categories of play (Jenvey, 2002; Rubin, 1980; P. K. Smith & Vollstedt, 1985). One common characteristic used for identifying play in former research have been that play is an activity that serves no apparent purpose, the activity being more important than its ends (Bekoff & Byers, 1981; Martin & Caro, 1985; Pellegrini & Bjorklund, 2004; P. K. Smith & Vollstedt, 1985). In this lies the notion of play being an inner directed activity not motivated by pursuing outcome goals. This notion is expressed by Sutton-Smith (1997) describing play as activity that serves the opportunity to actualize one's potential, providing an optimal experience of arousal, excitement, fun, merriment, joy, and lightheartedness. According to Sutton-Smith the characteristics of the nature of play are that it is voluntary and intrinsically motivated activity

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that children tend to repeat almost obsessively because of the pleasurable excitement they experience. In this paper the focus is on children's risky play. Risk-taking in play is a natural part of children's play (S. J. Smith, 1998), and research show that children often engage in risky forms of play where they can rehearse fighting skills, test their physical strength and courage, even though it involves the possibility of getting hurt for real (Aldis, 1975; Ball, 2002; Buss, 1997; Pellegrini & Smith, 1998; S. J. Smith, 1998; Stephenson, 2003). Risky play, as defined in this paper, is thrilling and exciting forms of play that involve a risk of physical injury.

Risky play can, in worst case scenario be injurious and even deathly for children engaging in it, and this has been a central focus in the recent discussion on child safety on playgrounds and playground equipment legislation (Caesar, 2001; Swartz, 1992; Taylor & Morris, 1996; Wardle, 1997; Zeece & Graul, 1993). On the other hand several researchers state that an exaggerated focus on children's safety can be problematic because the quest to avoid childhood injuries will constrain the abilities for challenges and varied stimulation that children need to develop normally both physically and mentally (Ball, 1995, 2002, 2004; Boyesen, 1997; Breivik, 2001; Caesar, 2001; Chalmers, 2003; Freeman, 1995; Furedi, 2001; Heseltine, 1995; Little, 2006; New, Mardell, & Robinson, 2005; Satomi & Morris, 1996; Sawyers, 1994; S. J. Smith, 1998; Stephenson, 2003; Stine, 1997; Stutz, 1995; Zeece & Graul, 1993). The understanding of the significance and meaning of risky play in children's lives, as well as its possible beneficial or harming effects are important perspectives in the growing attention to risky play. Still, studies conducted on the issue of risky play lack a common conceptualization and characteristics to help identify and further explore such play. The aim of this paper is, on the basis of video observations of children's play, to identify characteristics of children's risky play.

### *The concept of risk and the risk in play*

What is risk? According to Adams (2001) risk comes in many forms, such as physical risk, social risk and economic risk, with innumerable subdivisions of these categories. Thus, the word risk would bring forward different associations for different people and in different settings, and a broad and overall definition would bring difficulties. Still, some definitions are made in literature on risk and risk-taking. Adams (2001, p. 26) broadly defines risk as used in everyday life as "unquantifiable danger, hazard, exposure to mischance or peril". With this,

Adams puts a greater focus on the variability and uncertainty in the issue of risk than the formal risk assessment and risk management literature and policy have done by trying to calculate the objective risk in different situations. Adams (2001, p. 13) acknowledges that there is an objective risk, but emphasize that this risk is not possible to quantify or predict: “The problem for those who seek to device objective measures of risk is that people to varying degrees modify their level of vigilance and their exposure to danger in response to their *subjective* perceptions of risk”. The subjective risk perception is how the individual him/herself evaluates the probability of something dangerous happening and how imminent the danger is perceived (Boyesen, 1997; Teigen, 2001). As such, the risk a person perceives at the moment will have impact on how the individual chooses to approach and handle the risk, and thus influence the objective risk in the situation. The present paper deals with objective risk in accordance with Adams’ (2001) understanding of this concept. In this view objective risk is a description of the factors that constitute a potential risk in the situation both influenced by external hazards and by the child’s subjective risk perception and risk-taking behavior. In this view it is possible to describe objective risk criteria, but it is not possible to calculate or predict the risk.

### *The risk in play*

What constitutes the most common objective risk factors for injury outcomes in children’s play? The safety legislation for children’s play environment and playground equipment that has emerged in several countries around the world has primarily focused on physical features such as maximum fall height, impact of absorbing surfaces, sharp edges, unstable equipment and the likelihood of being trapped, pinched, crunched or struck (Ball, 2002, 2004; Chalmers, 2003; D.S.B., 1998; Little, 2006; Mowat, Wang, Pickett, & Brison, 1998). This is based on accident research showing that the majority of playground injuries result from falls from swings, slides, climbing frames or other equipment (Ball, 2002; Illingworth, Brennan, Jay, Al-Ravi, & Collick, 1975; Rosen & Peterson, 1990; Sawyers, 1994; Swartz, 1992). Also being hit, pinched or crunched in swing equipment (Illingworth et al., 1975) and bicycle injuries are quite common (Peterson, Gillies, Cook, Schick, & Little, 1994; Rosen & Peterson, 1990). Supervision/surveillance is also an issue in the debate of heightening or reducing risk factors in children’s play. Research on playground injuries have indicated that lack of supervision is one of the causes for in childhood injuries in play (Morrongiello, 2005; Rosen & Peterson, 1990; Taylor & Morris, 1996). This doesn’t mean that adults should restrict children from

engaging in risky and challenging play activities, but rather that adults as caregivers and supervisors have a pedagogical responsibility of letting the children encounter risks and challenges within a safe setting (S. J. Smith, 1998). Still, supervising adults' own risk perception in the situation will influence how they react to the risk-taking child, and thus their actions of interfering, constraining or encouraging risky play will constitute factors that contribute to the potential risk in the situation.

It is not only the physical features of the equipment or the number of supervising adults that constitute the most common risk factors for injury on playgrounds. Children's actions, normal rashness and improper usage of the equipment, such as walking or turning summersaults on top of a climbing frame, standing (even on the shoulders of others) on the swing, or pushing others off a slide or a swing, seems to be an even more important cause of playground injuries (Ball, 2002; Coppens & Gentry, 1991; Illingworth et al., 1975; Rosen & Peterson, 1990). Vigorous rough-and-tumble play also seems to involve a harming potential, with research showing that 3.7 % of rough-and-tumble bouts led to an injury (Humphreys & Smith, 1987). In this view the child's subjective risk perception, the decision of engaging in risk-taking play, and in what way this play is performed influence the objective risk in the situation (Adams, 2001). Children's risk perception has clear individual differences, and children who are exhilarated by risks are more likely to engage in risky play (Cook, 1993; Cook, Peterson, & DiLillo, 1999; Miller & Byrnes, 1997). In accordance with this, studies have found that a high activity level and a risk-taking personality with desire to engage in daring behavior among children are important risk factors for accident proneness and injury incidence (Matheny, 1987; Miller & Byrnes, 1997; Plumert & Schwebel, 1997; Potts, Martinez, & Dedmon, 1995; Rosen & Peterson, 1990). Still, studies indicate that children are aware of their risk mastery and regulate their risk-taking play progressively according to their fear and ability (Aldis, 1975; Davidsson, 2006; Kaarby, 2004).

### *Categories of risky play*

Risky play primarily takes place outdoors in children's free adventurous physical activities (Sandseter, 2007c; Stephenson, 2003). Risky play often involve letting go of control and overcoming fear in situations with high speed or great height, and examples of these activities would be such as sliding, swinging, climbing (trees and climbing towers), climbing up and jumping down from big rocks or small cliffs, balancing on stones or windfallen trees,

shooting with bows and arrows, whittling with knives, fencing with sticks, high speed bike riding and children venturing out on their own (Kaarby, 2004; S. J. Smith, 1998; Stephenson, 2003).

In a study aiming at systematically categorizing the various kinds of risky play through interviews and observations of children and staff in Norwegian preschool, Sandseter (2007a) revealed six categories of risky play. In a follow up study (Sandseter, 2007b), these categories were confirmed and even further developed by identifying several subcategories:

Table 1: Categories and subcategories of risky play (revised from Sandseter, 2007a, 2007b)

<b>Categories</b>	<b>Risk</b>	<b>Sub-categories</b>
A: Great heights	Danger of injury from falling	Climbing Jumping from still or flexible surfaces Balancing on high objects Hanging/swinging at great heights
B: 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
C: Dangerous tools	Can lead to injuries and wounds	Cutting tools: Knives, saws, axes Strangling tools: Ropes, etc.
D: Dangerous elements	Where children can fall into or from something	Cliffs Deep water or icy water Fire pits
E: Rough-and-tumble	Where the children can harm each other	Wrestling Fencing with sticks, etc. Play fighting
F: Disappear/get lost	Where the children can disappear from the supervision of adults, get lost alone	Go exploring alone Playing alone in unfamiliar environments

Sandseter's (2007a) interviews revealed that some of the categories were perceived risky by both children and staff (a, b and e), while others were unanimously perceived risky only by the staff (c and d), and still others were perceived risky only by the children (f). Sandseter's categories were also confirmed and validated by an experienced preschool teacher who evaluated the categories to be both reliable according to the data material and as being compatible with the teacher's experiences of children's play in preschool. Still, Sandseter calls for further research to validate and explore these categories.

*Risky play; harmful or beneficial?*

Children engage in play because it brings about pleasant experiences and emotions such as arousal, excitement, fun, merriment, joy, and lightheartedness described by Sutton-Smith (1997). In one of the classic works on animal and human play Aldis (1975) points out that much of children's play is related to fear, and that young children actively seek out the thrills of fearful situations such as swinging and jumping from high places. The vital motivational force for their engagement in risky play is, according to Apter (2007), the intention of experiencing the excitement and the joy of mastering a risky and potentially dangerous situation, and the thrill of being on the dangerous edge, fully aware of the possible outcome of fear or, even worse, injury.

The recent play safety debate have brought forward a focus on not just the potentially harmful and injurious outcomes of risky play, but also the beneficial effects of such play beyond the positive experiences it brings about for children. Children are naturally curious and excitement seeking, through explorative and risky play they become familiar with their environment and its possibilities and boundaries, and they find out what is dangerous and how to handle the risks they come across (Adams, 2001; Apter, 2007; S. J. Smith, 1998; Sutton-Smith, 1997). Several researchers have revealed that children engaging in challenging play in nature areas show improved motor skills and spatial skills (Fiskum, 2004; Fjørtoft, 2000; Grahn, Mårtensson, Lindblad, Nilsson, & Ekman, 1997), and that through risk-taking in play children learn risk assessment and how to master risk situations and thus develop a sound sense of risk which may aid survival when, later in life, watchful adults are no longer present (Aldis, 1975; Apter, 2007; Ball, 2002; Boyesen, 1997; Stutz, 1995). According to Aldis (1975) children progressively encounter risky play and seek out thrills in a gradual manner which allows them to master the challenges. Through risky play children prepare for handling real risks and dangers – it is serious risk-management exercise (Adams, 2001). This exercise is, by several researchers, viewed as an important adaptive function of play that serves the beneficial effect of gradually making children able to master risks that they have to face both in childhood and later as adults in emergency situations (Aldis, 1975; P. K. Smith, 2005; Sutton-Smith, 1997)

## **The present study**

### *The settings and subjects*

Risky play is primarily found to occur in outdoor play (Sandseter, 2007a; Stephenson, 2003). The two preschools in this study were chosen because they both spent a great deal of time outdoors. This selective choice of participants makes the sampling procedure in this study purposive (Berg, 2007; Merriam, 2002; Patton, 1990). One of the preschools was an outdoor preschool, spending most of their time outdoors in nature areas. Outdoor preschools in Norway are preschools where outdoor life and play and learning in nature environments are emphasized. This outdoor preschool was situated in a great forest. It had a building, but they rarely spent time indoors, no matter how the weather was. The preschool playground, in this case the immediate vicinity outside the preschool building was a forest area where the only play equipment was a sandpit and a giant's stride (a rope in a tree), and there were no fences surrounding the playground. The other preschool was an ordinary Norwegian preschool in a residential area, with a preschool building surrounded by a standardized playground with sandpits, swings, a climbing tower, a play hut, switchbacks and some climbing trees. The playground in this preschool was surrounded by a fence. Still, both the preschools had a practice complying with the governmental pedagogical laws and guidelines for all preschools in Norway. The pedagogical guidelines for all preschools in Norway are characterized by emphasizing children's play and learning through play in various contexts rather than focusing on schooling activities. Due to 80 % coverage of preschools for Norwegian children, both the preschools and the children attending the two preschools in the present study will be representative for preschools and preschool aged children in Norway.

All the four and five year old children in the two preschools were observed and videotaped while playing; there were a total of twenty-nine children, twenty-one girls and eight boys. Informed consent to observe the children was obtained by proxy from parents (Greig & Taylor, 1999). Parents and children were informed of the project and the fact that a researcher would join the children in their outdoor play carrying a video camera. At any moment, the children were free to let the researcher know if they did not want to be observed or videotaped.

### *The video observations*

The study was carried out in naturalistic settings of the two preschools (Greig & Taylor, 1999; Patton, 1990). A total of nine days were spent in each of the preschools, participating in all of their outdoor activities on their preschools playgrounds. The researcher also took part on the

two preschools' hikes to other play environments (four of the days). This was hikes where the children and staff walked approximately from 2 – 5 kilometers into the woods to play and spend time in nature areas where there were cliffs, trees and hills for climbing and sliding/sledding. The children were observed over a period that stretched from winter to summer. This was to get a better understanding on how children's risky play differs during seasons and weather conditions. An important point of the research was to explore the risky play that emerges among children themselves, and it was therefore necessary for the researcher to take a somewhat withdrawn position, still being visible and known to the environment and, in that sense, participatory (Flick, 2006). The researcher had an anonymous and distanced role, not partaking in the play. By taking this reactive and slightly rejecting role, the children quickly became used to the presence and the non-important role of the researcher, and they would take a minimum notice to being observed.

The physical safety of the children is a relevant aspect in any study of children (Fine & Sandstrom, 1988), and perhaps especially important in a study of children's risky play. The researcher in this study would, in principle, not intervene in the children's play in any way, but in a couple of occasions, she evaluated the situation as so threatening for the child that she helped in order to avoid physical injury. This was at one occasion where a girl was trapped in a tree with her foot and arms unable to move and clearly expressed being afraid and that she was hurting, and there was none of the staff around to help her.

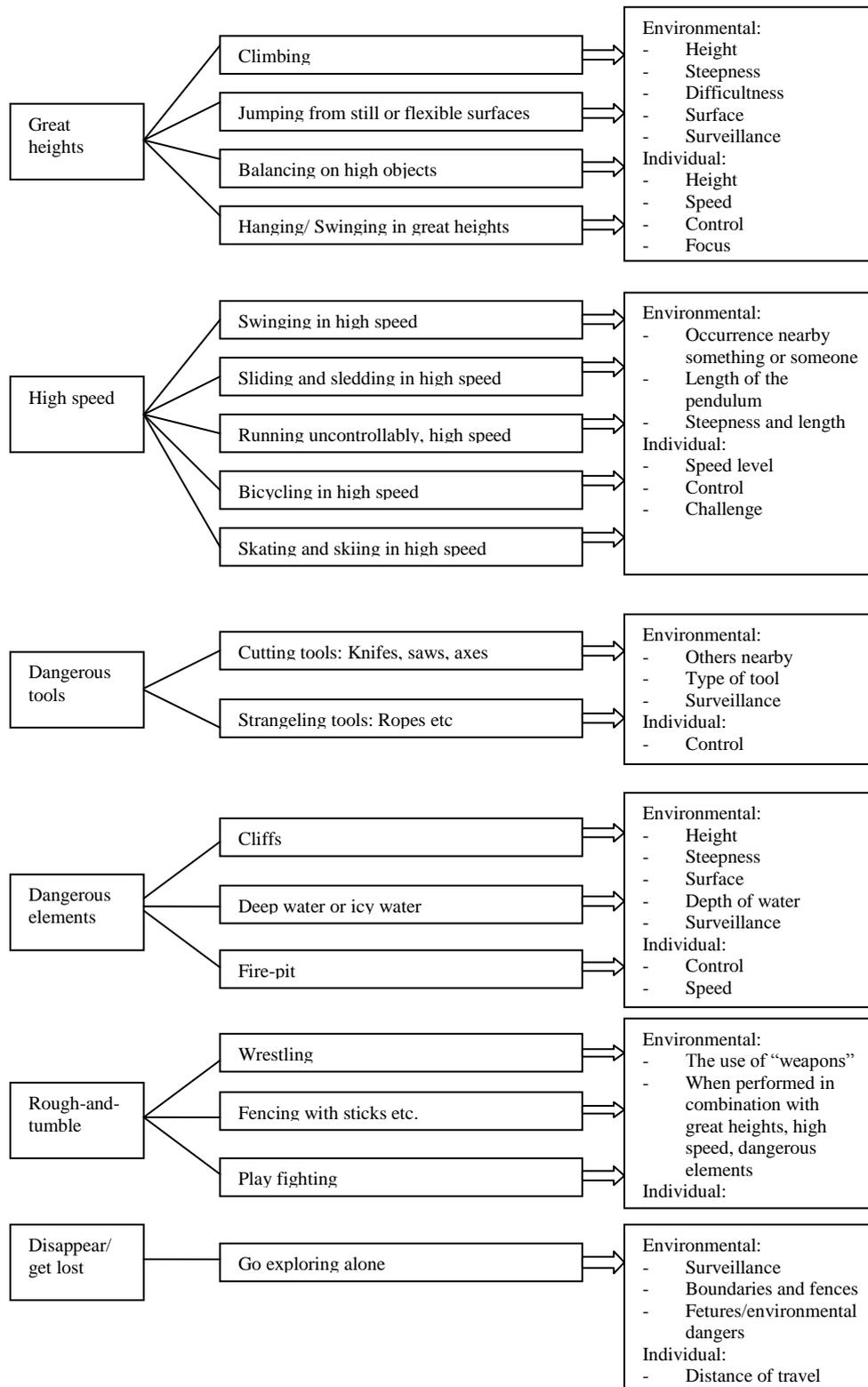
The video observations were focused observations based on prior developed categories of outdoor risky play (see Sandseter, 2007a, 2007b): a) Play in great heights, b) Play with high speed, c) Play with dangerous tools, d) Play near dangerous elements, e) Rough-and-tumble play, and f) Play where children can disappear/get lost. This was done to both secure a thorough focus on what the study aimed to explore (characteristics of risky play) and to limit the amount of data gathered to what is readily analyzable (Silverman, 2005). Field notes were written when video recording was not possible. Saturation was reached when the observations did not provide any further knowledge or information to enlighten the research question (Flick, 2006). In the end the data material consisted of field notes from approximately ninety hours of observation and six hours of focused video clips. The videos and field notes were transcribed in detail in an electronically word-file.

### *The analysis of the data*

First, the transcriptions were read thoroughly with the research question in mind (Vedeler, 2000), and reduced by cutting off as much as possible of the irrelevant video clips and information (Miles & Huberman, 1994). The prior categories of risky play (Sandseter, 2007a) were used as main chunks for the second level of analysis. During this analysis, a further data reduction was performed on passages and situations in the material that were irrelevant or overlap too much (Miles & Huberman, 1994). At the third level of analysis an analytical coding (Richards, 2005) was conducted. In analytical coding, one creates conceptual categories and gathers the data needed to explore them. In this study the categories of risky play were predefined, and the researcher analyzed the data to find codes that describe risk characteristics in each of the six risky play categories. These codes emerged from the data as identified and interpreted by the researcher. The codes were then analyzed to find common characteristics of risk, and organized into chunks across the risky play categories. In the end, the chunks of risk characteristics found in the data material were interpreted in relation to former research on each of the categories of risky play.

## **Results and discussion**

What makes play risky? A number of risk characteristics were observed and interpreted by the researcher in the present study. Some risk characteristics were *shared* for several risky play categories, and *exclusive* for others. When analyzing the data, across the six categories of risky play, two categories (chunks) of risk characteristics emerged: a) environmental characteristics (including the staff as a part of the environment) and b) individual characteristics (how the play was carried out by the child). A summary of the results is presented in figure 1.



In the following section, the two categories of risk characteristics (a and b) found in the present study, under the headings of each of Sandseter's (2007a) six categories of risky play and their additional subcategories (Sandseter, 2007b), will be presented and then discussed in relation to objective-/subjective risk and former research on risk-taking and injuries in play.

### *Play with great heights*

*Environmental characteristics.* The common environmental characteristics that heighten the risk of injury in play with great heights (climbing, jumping down from high places, balancing on high objects and hanging/swinging/dangling) were the actual *height* of the object of the play (for instance, a tree or a cliff), the *steepness* of the object of play (for instance, a cliff), the *difficulty* of mastering the aimed activity in the play (for instance, the breadth of a balancing log), the *surface* on which the play participants potentially would fall down on, and *surveillance/supervision* from the staff.

*Individual characteristics.* The individual characteristics of how the play was carried out by the children were identified as *how high* up from the ground the child wanted to play, the *speed of movements* in the play (for instance the speed or rashness of the climbing movements), the bodily and motor *control* the individual child possessed while playing, the *focus* of the child while playing (for instance when a climbing tree was the scene of a rough-and-tumble role play where the children focused on being Spiderman rather than concentrating on the climbing), and the individual child's way of increasing the *challenge* (for instance, leaping from branch to branch while climbing or trying to pass each other on a branch in the tree).

Both the environmental and the individual characteristics influence the objective risk in play at great heights. Environmental characteristics such as height, steepness, difficulty and surface are physical features that influence the chance of falling and the seriousness of a possible injury as a result of falling. The objective danger of being hurt while playing at great heights is supported by the injury statistics showing that the majority of childhood injuries result from falls while playing (Ball, 2002; Illingworth et al., 1975; Rosen & Peterson, 1990; Sawyers, 1994; Swartz, 1992). Surveillance/supervision from the staff was also a characteristic that influenced the objective risk in the play situation. In Sandseter's (2007a) study the preschool staff perceived play with great heights to be a high risk play. In accordance to this, climbing

was one of the few kinds of play where the staff intervened and constrained the children's play in the present study. One example of this was an occasion where a staff member approached children climbing high up in a tree, 3-4 meters above the ground, and told them to immediately come down and keep at a lower level in the tree. In this sense the staff member's perception of risk in the situation influenced the children's ability for risk-taking. It is worth mentioning that in some situations the interference by preschool staff when children are for instance climbing deeply concentrated and cautiously at great heights, sometimes can increase the risk because the child turn their attention to the staff rather than keeping focused on managing the risk. The objective risk in play at great heights is also heightened by the individual risk characteristics such as when children push their limits of competence and control by, for instance, increasing the challenge, height, and speed of movements in their play. As children's play becomes more hazardous and risk-taking the probability of injury increases (Matheny, 1987; Miller & Byrnes, 1997; Plumert & Schwebel, 1997; Potts et al., 1995; Rosen & Peterson, 1990). The individual characteristics of children's risky play are to a great extent influenced by the subjective risk they perceive in the situation (Adams, 2001). One could expect that children perceiving a low subjective risk in these situations would be prone to increasing the height, challenge and the speed of movements. When perceiving low subjective risk, they would also allow themselves to be less focused on managing the risk. The children in Sandseter's (2007a) study expressed in interviews that playing at great heights such as climbing, jumping and balancing was both scary and fun, and they clearly perceived a subjective risk in this kind of play, but still approached these situations because it gave pleasurable experiences (cf. Sutton-Smith, 1997). Similarly in Davidsson's (2006) study, the children expressed in interviews that climbing was exciting and challenging, and some also told they heightened the risk by jumping off from the swings in motion. Even though children's risk-taking decisions in play will increase the objective risk in the situation, research indicates that children regulate the risk in a gradual manner according to their own competence and fear (Adams, 2001; Aldis, 1975; Davidsson, 2006; Kaarby, 2004; Readdick & Park, 1998). When climbing, they found their own way up, fitting their strength, height and skills to the task, and they stopped climbing when it became too dangerous for them. The individual risk characteristics of how children engage in risky play in great heights can therefore both increase the objective risk in the situation, but also serve as a risk modifier where the risk taken is adjusted to the individual child's abilities.

### *Play with high speed*

*Environmental characteristics.* The common environmental characteristics that were evaluated by the researcher to influence the risk of injury in play with high speed risky in all the subcategories (swinging, sliding/sledging, bicycling, running uncontrollably and skating/skiing) were the *occurrence nearby something or someone* that one could crash into (for instance, crashing into a tree when sledging on the snow or crashing into someone while swinging). A risk characteristic in the play environment exclusively for the swinging activity was the *length of the pendulum* of the swing, because this increased both the speed and the height of the swinging. For sliding/sledging, running, bicycling and skiing both the *steepness* and the *length* of the sliding equipment or hillside were risk characteristics that increased the speed and danger of injury in the play.

*Individual characteristics.* The individual characteristics were identified as the *speed* level the child intently achieves while swinging, sliding/sledging, bicycling etc. (for instance, when running or bicycling in high speed down a steep hill). Another risk characteristic related to how the child carried out the play was, similar to play at great heights, the *bodily and motor control* the individual child seemed to possess while playing, and the individual child's way of increasing the *challenge* (for instance, through swinging several children together or sliding on the stomach with head first).

Similar to play with great heights, both environmental and individual characteristics influence the objective risk in play with high speed. The environmental risk characteristics such as the length of the pendulum of a swing and the steepness and length of the sliding equipment will increase the actual speed and thus the risk for injury if the child crashes into something or someone. Research on playground injuries supports this as it shows that swinging, sliding (Ball, 2002; Illingworth et al., 1975) and bicycling (Peterson et al., 1994; Rosen & Peterson, 1990) account for a great part of childhood accidents. Injuries related to play with high speed are also more common when children engage in this kind of play in challenging and experimental ways (Ball, 2002; Coppens & Gentry, 1991; Illingworth et al., 1975; Rosen & Peterson, 1990). Thus, individual characteristics influence the objective risk for injury outcome in play with high speed in situations where the children choose to heighten the

challenge and the speed in the play. The individual characteristics of how children carry out play in high speed are dependent on their subjective risk perception.

Children perceiving a low subjective risk while, for instance, sledging on the snow, would tend to try out various challenging ways of sledging, sometimes several children together, and to choose sledging spots where achieving a high speed is possible. The children interviewed in Sandseter's (2007a) study perceived play with high speed as scary, and it was also perceived as risky by the preschool staff. Still, as in play with great heights, they pursued engaging in high speed play because they enjoyed the experience of it so much. Similar to the results on climbing, research have shown that children moderate and adjust the risk in play with high speed to their abilities and fear by progressively encountering higher speed, letting go of control and creatively new and more challenging ways of for instance sliding, sledging or swinging (Aldis, 1975; Davidsson, 2006; Kaarby, 2004).

#### *Play with dangerous tools*

*Environmental characteristics.* The environmental characteristics that can make play with dangerous tools risky are the use of such tools *near other people* (with the potential risk of harming someone unintentionally by accident), the *type of tool* (for instance how sharp and how big the knife is), and whether the children are under *surveillance* by adults when using the tools.

*Individual characteristics.* The individual risk characteristics related to how the play with dangerous tools was carried out by the child were identified as the bodily and motor *control* the individual child possessed while using the tools (for instance, would a clumsy child more easily cut himself), and also the degree of *focus and concentration* on using the tool in a careful and correct way.

The objective risk of playing with dangerous tools is quite evident. Most people will agree that there is a clear risk that children playing with knife or axes can unintentionally harm themselves or others. The sharpness of the knife or the axe would influence the chance of cutting oneself, and if the tool is used nearby other children it can accidentally lead to hurting others. Still, as Sandseter (2007a) argues, the objective risk related to injuries as a result of using dangerous tools in preschool lacks statistical documentation. Few former studies have documented the use of dangerous tools in preschool, and cultural differences indicate that

allowing children's use of dangerous tools in preschool is probably a Scandinavian phenomenon (New et al., 2005; Sandseter, 2007a). Surveillance/supervision is also an environmental risk characteristic when children play with dangerous tools. The observations in the present study showed that the staff was very attentive and had a strict surveillance of the activity when the children played with dangerous tools. The staff seemed to experience a strong subjective feeling of risk on behalf of the children and they kept close to the activity and continuously gave instructions on how the children should handle the tools. As such, the objective risk in play with dangerous tools was attempted to be reduced by a strict surveillance and regulation. This is in accordance with the expectation that close surveillance/supervision of children's play reduces the chance of injury (Rosen & Peterson, 1990; Taylor & Morris, 1996). In Sandseter's (2007a) study, the children were allowed quite freely to use knives, saws, hammer and nails, and ropes, but the use of axes brought about a more strict surveillance than the other dangerous tools. In Kaarby's (2004) study, the children were allowed to use a knife for whittling and help in building the bonfire when on hikes, but similar to the present results, one of the staff always had to stay by the fire for surveillance. Individual risk characteristics of how children play with dangerous tools also influence the objective. If the child's ability to handle the tool in a safe way is poor, the risk of getting hurt or injured is higher. Similarly the focus and the concentration the children have using the tool is essential for the risk present. The results in the present study showed that the children were strongly concentrated while playing with dangerous tools, and they talked to each other about how important it was to use the tools 'the right way' not to hurt themselves or others.

#### *Play near dangerous elements*

*Environmental characteristics.* Environmental characteristics of the risk in play near dangerous elements were identified as the *height* of elements where the risk of falling down was present (for instance the height of a cliff), the *steepness* of such an element, the *surface* beneath the high element (the risk was greater when falling on rocks than on grass), the *depth of water* when the play took place nearby water with the potential of drowning, and the degree of *surveillance* from the staff (how fast they would be able to rescue or help children if needed).

*Individual characteristics.* The individual risk characteristics identified in play near dangerous elements were the bodily and motor *control* of the children involved in the play (for instance,

if the child was able to regain balance when slipping on a rock near deep water), the *speed* of movements in the play (for instance, running fast and uncontrollably nearby a fire pit), and the *focus/concentration* on the dangerous element opposed to the content of the play situation (for instance, when children chase one another near the edge of a steep cliff, forgetting about the cliff but concentrating on the chase).

When children play near dangerous elements the objective risk is, similar to the former described risk categories, influenced by both environmental and individual risk characteristics. When children's play take place nearby a high and steep cliff, both the height and the surface on which they may fall will constitute factors that influence the chance of injury. Falls from heights onto hard surfaces are one of the most common reasons for injuries among children (Ball, 2002; Illingworth et al., 1975; Rosen & Peterson, 1990; Sawyers, 1994; Swartz, 1992). Still, in play near dangerous elements the individual characteristic's is particularly important for the risk present in the situation. What kind of play children perform near the dangerous element and how (concentration, speed, and control) this is carried out have a great impact on the chance of an injury occurring. In the present observations, the results showed that the children were preoccupied with their play rather than paying attention to the dangerous element they played close to. As such, the children do not seem to perceive a subjective risk in the situation. As argued by Sandseter (2007a), this category is perceived risky primarily by the staff watching the children play. The children's focus is on what they are playing and not the dangerous element they are playing nearby.

#### *Rough-and-tumble play*

*Environmental characteristics.* In rough-and-tumble play, the environmental characteristics were only important as risk characteristics when the rough-and-tumble play was performed *in combination with one of the former categories* (great heights, high speed, and dangerous elements; see above for risk characteristics). The only other environmental risk characteristic identified was the kind of *weapon* used in the play fight (for instance heavy and long wooden sticks for fencing).

*Individual characteristics.* The individual risk characteristic identified was the *control* of the play situation by the children, meaning if they were able to keep the fight in the atmosphere of play or if the play suddenly became a real fight. Included in this characteristic are features

such as the degree of threatening and scaring each other, the degree and control of strokes, chases and fencing against each other.

Also in rough-and-tumble play both the environmental and individual characteristics influence the objective risk. The objective risk in rough-and-tumble play is minor when the play is kept at a play level. Still, unintentional harm or accidents may sometimes occur when a child misjudges a stroke or a wave of the fencing stick, or when the play occasionally switches into real fighting (Humphreys & Smith, 1987). Blurton Jones (1976), Humphreys and Smith (1984) and Smith (2005) describe this type of play involving a fine balance between play and real fighting, and the margins are small for one of the children becoming hurt for real. Because of the small margins between play and real fight, the individual characteristics of control of the play situation are important for the risk in the situation. Rough-and-tumble play is a kind of play where children rehearse social signaling (Humphreys & Smith, 1987; Pellegrini & Smith, 1998), and joining such play without being familiar with the threatening but also playful signals this kind of play involves will increase the chance of the play turning into a real fight. In accordance with this Blurton Jones (1976) describes that children new in the nursery in the beginning keep a distance away from the rough-and-tumble play, watching and learning the rules and play signals, before they gradually join the play.

#### *Play where children can disappear/get lost*

*Environmental characteristics.* The environmental risk characteristics when children go exploring alone are the degrees of *surveillance* by the preschool staff (the point of this play is for the children to feel alone, but keeping an eye on them at distance would decrease the risk in the situation), *boundaries and fences* in the area of exploration (both agreements on invisible boundaries for mobility and physical fences would decrease the risk), and the *features/environmental dangers* of the environment being explored (dense forest, steep hills and cliffs, and small lakes).

*Individual characteristics.* The individual risk characteristics in this kind of play are identified as the length of the *distance* the child chose to travel, and the child's *ability to find back if* once lost. In the present study, the children, especially in the outdoor preschool, had an extensive freedom to move around where they wanted.

The objective risk of physical injury is not necessarily present because a child gets lost. Still, getting lost can lead to emotionally unpleasant experiences and the child being anxious and fearful. The objective risk of physical injury is thus most evident in relation to dangerous features of the environment being explored combined with a lack of surveillance. The relation between surveillance and potential injury, and the chance of injury when falling from environmental dangers like great heights is discussed above. In the present study the staff entrusted the children with a high degree of independent mobility. This is in accordance with Sandseter's (2007a) findings that the staff did not think this was a situation that involved risk. They did not perceive a strong subjective risk on behalf of the children in this kind of play, and as Sandseter argues, this could be because they felt they were in control of the situation and that it was less likely to result in physical injury (less objective risk).

Still, the chance of children getting lost or injured by environmental features when wandering off alone without supervision is highly influenced by children's individual risk characteristics. These characteristics are influenced by the child's perception of how risky it is to walk off alone to new and unexplored areas. A child that perceives this as less risky would dare to walk farther away from the staff than a child who thinks getting out of the sight of the staff is scary. Children who perceive their chances of finding their way back easily will similarly be more prone to walk off alone.

## **Conclusion**

The researcher's interpretations of the video observations in the present study reveal two categories of risk characteristics that make risky play risky: a) environmental characteristics and b) individual characteristics. The environmental characteristics are characteristics in the environment that increase the possibility for an injury outcome of the play, such as, for instance, the height and steepness of a hill where the children can climb up and slide/sledge down. The environmental characteristics also include the degree of supervision by the preschool staff. The individual characteristics are characteristics of how the children carry out the play, such as for instance the actual height and speed the children urge to achieve in their play, their bodily control and their focus/concentration while playing. These characteristics are influenced by the children's subjectively perceived risk in the situation, and children's progressively way of approaching risks according to their fears and abilities serves as a moderator for the objective risk present. As such, both the environmental and the individual characteristics influence the actual chance of being injured in the play situation. Thus, a

combination of the environment in which the children play, and how they carry out play in this environment is interpreted to both constitute the objective risk in children's risky play. The play safety debate that waves through the western societies, bringing forth safety legislation, litigations, worried parents and child care workers, have led to the need for more knowledge on questions such as, what are the injury statistics related to risky play? Why (subjectively) do children decide to engage in these potentially harmful activities? What feelings and emotions do children experience when engaging in risky play? The further aim of the present study is to contribute to an increased focus on children's natural urge for risky play and more research on the topic in the future.

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