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Risk management

“The desire for safety stands against every great and noble enterprise.”

—Cornelius Tacitus, Roman historian (55–120 AD)

Risk management in children’s play settings has historically focused on injury avoidance, and standards for manufactured play equipment (ASTM) and playground guidelines (CPSC) were developed to achieve that goal. Unfortunately, an exclusive focus on injury avoidance has tended to produce uninspired, “cookie-cutter” playgrounds with diminished play value.¹⁰⁹

Nature play and learning places are of interest in part because they offer a more varied, challenging, and stimulating play environment with greater potential play value than that available from strictly manufactured equipment. Providers of natural play and learning opportunities must pursue two goals simultaneously: “to offer children and young people challenging, exciting, engaging play opportunities while ensuring that they are not exposed to unacceptable risk of harm.”¹¹⁰

This is not a simple task. One rule does not fit every setting or organization. Each provider must decide what level of challenge is appropriate for their particular situation—depending on age, level

of supervision, and degree of modification of the natural setting. For example, a supervised natural outdoor space may allow children to take greater risks relative to the children’s maturity level than a public park where no supervision is provided. In each context, the management goal should be to create an ongoing balance between developmental benefits and risk of harm.

In nature, many children will seek play and learning opportunities to engage and challenge themselves, foster their curiosity, and provide risk-taking that is appropriate to their individual developmental level. Children normally recognize risks, make judgments, and respond within or at the limits of their skill development. Under these developmentally appropriate circumstances, injury is unlikely. Consider this example:

A circuit of horizontal and angled logs has been installed for children to climb on, to step or jump from one to another, practicing balancing skills, and jumping off having completed the circuit. The size of the logs, the height above the ground, the inclination angles, the gaps between them, and the overall scale



appear to have been carefully considered to attract children 5 years old and older who jump from one to another to complete the circuit. However, the more skilled 4-year-olds are not to be left out and try climbing on individual logs. Some succeed and delight in jumping off—and endlessly repeat the climbing-jumping sequence. Others see the climb as too challenging and zigzag around the logs at ground level. At other times, this multipurpose setting serves as a meeting circle. Older children who read the setting as insufficiently challenging self-select out and find something else to do.

Children attracted by the level of challenge of the logs experience the risk by balancing above ground, judge the distance between logs to traverse, exercise gross motor skills as they leap from log to log, and enjoy the sense of accomplishment at the end. From previous experience, the children have learned that if they judge the distance incorrectly they might lose their balance and fall but likely will stay upright and, if not, may experience a knock or scrape. In this example, an unacceptable risk of harm would be present if the logs appeared to be anchored but in fact were not and could topple when children stood on them.

6.1 A child carefully “tests the affordances” of logs spanning a small stream as he faces the challenge and calculates the risk of crossing to the other bank. At the same time he is honing psychomotor balancing skills that may be put to use later in life as gymnast, fireman, or just navigating a piece of furniture down a staircase. [Nature PlayScape](#), Cincinnati Nature Center, OH. (Case Study 6)

HAZARD, RISK, AND INJURIES

Words like “hazard” and “risk” are often used interchangeably and without precision, but it is important to have a shared agreement about what the terms mean to achieve the desired outcome of a play and learning settings that are challenging, but do not present an unacceptable risk of harm.

Hazard refers to any potential source of harm and is often used to describe a situation that is unacceptable and requires mitigation. But a moment's reflection makes it clear that hazards are present in every situation, in the sense that any action or object has the potential in certain circumstances to cause harm.¹¹¹ Even safety materials in certain circumstances can be hazards; pea gravel and poured-in-place rubber surfacing are commonly used for impact attenuation, but they are also choking and burn hazards under certain conditions. The challenge for the risk manager is not to eliminate all hazards, but to assess the risk presented by the hazard, and to remove hazards that in present and foreseeable circumstances present an unacceptable risk of harm. “Dangerous” and “safe” are also used to describe children's play settings, but they

are imprecise, contribute to unclear expectations, and therefore are not useful.

Risk is defined as the combination of the probability of occurrence of harm and the severity of that harm. A *Risk Assessment* involves consideration of the developmental benefit of the hazard, the probability that the hazard will cause harm, and the likely severity of the harm.¹¹² Risk is present in virtually every situation both in nature and in life, and part of growing up is learning how to navigate risk. A setting devoid of risk is boring and, from a developmental perspective, lacks opportunity to develop skills and judgment. For this reason Frost concludes that, “a reasonable risk level is necessary in play but, as in other life activities, there must be limitations on the degree of physical risk.”¹¹³

6.2 Which situation poses a hazard, if any? What are the relative risks and benefits of each? What is the adult role in each situation, if any?



Severity of injury can be described in terms of the Abbreviated Injury Scale, with range of severity from 1 (minor) to 6 (unsurvivable injury).¹¹⁴

An important goal of a nature play and learning space is to present and maintain a reasonable risk level, so that challenging, interesting conditions are present but an unacceptable risk of harm is not. In conditions of reasonable risk, minor injuries, such as scrapes resulting from a boulder scramble, should not be regarded as adverse outcomes at all—unless they indicate the presence of an avoidable or bad risk such as a hidden sharp object, or a design or other fault that is likely to cause more serious injury. Risk of severe and life-threatening injury should be vanishingly small—but it is important to observe that, short of removing all trees and draining all bodies of water, some risk will remain, and the occurrence of serious injury is not in itself evidence of a poorly managed space.¹¹⁵

A reasonable risk relates to the play “affordances” discussed earlier. As children move around their environment, they “read” the risk affordances, evaluate them, and choose whether to activate them. In this way, risks are learned and mastered. With the newly acquired skill, the child seeks out and tests new levels of risk. As described in *Managing Risks*, “Good risks and hazards in play provision are those that engage and challenge children, and support their growth, learning and development. Bad risks and hazards are those that are difficult or impossible for children to assess for themselves, and that have no obvious benefits.”¹¹⁶ A manager will strive to cultivate good risks, and eliminate bad risks.

An example of reasonable risk comes from the Santa Barbara Natural History Museum’s fort building station, which consists of lengths of bamboo poles up to 8 feet long and four inches in diameter (6.4). Children lean the lengths against a slanting tree to create a temporary structure, and regularly



remove, adjust, and replace the poles. One day a child remained under the structure while other children were dismantling it and a pole fell and struck her head. The child cried for a few minutes before resuming play and the adult supervisor asked her, “What did you learn from that experience?” “Not to stay under the fort when we are taking it down,” she replied.¹¹⁷ Despite the risk of being struck by a pole, the risk was reasonable, because the poles were light enough not to cause even minor injury and because there is developmental value in the fort building activity. To the manager’s knowledge this was the only time that a child had been struck by a falling pole, which suggested that most kids were able to “read” the risk and avoid falling poles. Even the child who did not catch on at first will probably not be surprised again!

6.3 Tree climbing, once an unquestioned, quintessential, rite of childhood, now appears contentious. Nonetheless, any tree-climbing kid can discriminate between “good” trees (like the one pictured here) and the to-be-avoided variety (lowest branches too far from the ground, not enough limbs and/or angles too vertical, insufficient crotches to hang out in, etc.). Why is tree climbing so attractive? Is it dangerous? What are the facts?

6.4 (Inset) “What did you learn from that experience?” “Not to stay under the fort when we are taking it down,” she replied.

DEVELOPING A RISK MANAGEMENT PROTOCOL

This guide is not intended as legal advice, nor is it intended to establish design standards. Instead, we urge managers to establish a systematic risk assessment and management protocol in order to provide a stimulating play environment while eliminating exposure to unacceptable risk of harm. An effective **risk management protocol** can be developed by following the steps below:

Step 1

Determine applicable design standards and standards of care in your jurisdiction.

There are no national design standards for nature play and learning spaces, and applicable liability standards are generally established by state legislatures. At the time of publication, to our knowledge no states or regulatory bodies have adopted design standards for nature play and learning spaces.

Managers should be aware of the following standards and guidelines for traditional manufactured playgrounds. The American Society for Testing and Materials has promulgated standards for manufactured playground equipment and for impact attenuation systems under and around playground equipment. An additional source is the Consumer Product Safety Commission's *Handbook for Public Playground Safety*. Because the field is changing rapidly, it is important that managers determine what design standards, if any, are applicable to a nature play space in their jurisdiction.

Even if there are no binding design standards for nature play spaces, the standard of care will likely be identical for a nature play space as for manufactured play equipment because both are designed and intended for use by children. The applicable standard of care is determined by case law in state courts, or by state legislation. Many states have adopted recreational use statutes, which modify the common law standard of care to favor providers of recreation, but these statutes vary widely in terms of which types of landowners qualify under the

statute, so it will be important to consult your agency's general counsel or a recreational law authority in your jurisdiction.

Generally speaking, while a manager has no duty to mitigate or warn users of dangers in an unmodified natural area, if the area is designated as a nature play space or modified with the intent that it serve as a natural play space, the manager will have a duty to remove dangers that are not open and obvious to the intended user and that present a risk of injury above what is acceptable to society.¹¹⁸ In some cases a nature play area may include traditional manufactured play equipment and, while the presence of manufactured elements will not change the treatment of natural elements, a manager can expect that the same regulations and standard of care will apply to the manufactured equipment as would be the case if it was installed in a traditional playground.

Step 2

Engage your insurer or risk manager.

Adequate insurance coverage is essential to every agency, so it is recommended that an agency's insurer be engaged when planning a nature play space, since private insurers may have their own risk management requirements. This early consultation will allow you to make a case for your design and risk management plans, and will avoid unpleasant surprises after funds have been invested. Agencies that are self-insured will have considerably more flexibility in developing the risk

management policy of their choosing, but it will still be important to engage internal risk managers early in the planning process.

Step 3

Conduct a risk assessment and eliminate hazards presenting undue risk of harm.

The more common hazards that apply to nature play risk management are summarized below.

Potential for falls. The greatest cause of injury on standardized playgrounds is falls. The risk of injury increases with height. When placing natural objects such as logs and boulders that are intended to be climbed, consider what a child might land on if he or she were to jump or fall off. Low stones, logs and stumps that have no moving parts and minimal fall heights less than 24 inches reduce the need for safety surfacing. However, when creating permanent structures utilizing natural materials, careful consideration should be given to design and installation in relation to the extensive knowledge about how and where children are injured on standardized playgrounds—particularly height and surface material. Information regarding impact-attenuating surfaces is available in the Consumer Product Safety Commission's *Handbook for Public Playground Safety*, publication No. 325.¹¹⁹ Remember to also give consideration to installing surfacing that would enable a person using a mobility device to interact with the object.

Trees in designated play spaces raise issues related to falls. Generally speaking, the risk of falling from a tree after climbing it would be considered an open and obvious hazard, so no modification of a tree to prevent climbing is necessary since even a child climbing a tree would be seen as assuming the risk of doing so. But if climbing aids are installed, allowing children to ascend to heights greater than they could have reached on their own, the modified tree would be viewed the same as a



manufactured climbing structure and additional fall-prevention and impact-attenuation measures should be taken. In both cases, if children are known to climb a tree, attention should be given to removing shrubs or smaller trees that might injure a falling child, placing additional wood fiber to offer fall protection and keeping the ground from becoming compacted.

6.5a The bamboo pole risk-management protocol marks the allowable climbing height for preschoolers.

6.5b What, if any are the risk management issues here?

6.6 No doubt this huge old tree, placed in a regional park nature play area, is an attractive climbing opportunity. The contorted, remnant root ball is an intriguing spot to explore and must stimulate many dramatic play episodes. To what extent are the root ball and trunk hazards, if at all? If so, why? Is there a risk of entrapment? How? What about the space under? Is that an entrapment possibility? How can the risks be measured? How can they be equated with the benefits of playing there?



Head Entrapment. Head entrapment can occur when a child enters a completely bound opening feet first, then slides his or her body through the opening and entraps their head. Entrapment is more likely to occur for children under 5, as their heads are larger than their shoulders or trunk. For manufactured equipment, completely bound openings that measure between 3.5 inches and 9 inches must be evaluated to determine whether they are entrapment hazards. In nature play and learning settings, these same measurements may be used to evaluate the configuration of openings that could be considered head entrapment hazards. Examples could include a situation where several logs or branches are permanently attached to one another to construct a fort or a climber, or a hollow log with openings that children can climb in and out of. Such a log should be evaluated for completely bound opening entrapment.

Protrusions. Clearly, nature is full of protrusions, so their potential to cause injury must be carefully considered but with discrimination. Some of the most common potential hazards are the ends of pruned branches of trees and shrubs at the eye height of children. However, the harmful potential varies greatly by species. Plants with rigid, horizontal branches are the most obvious. Another situation with similar potential could be the exposed rootball of a fallen tree. In this case, eye-level roots that a child could run into or fall against would be trimmed and/or sanded smooth. Small vertical projections, such as a broken branch or the sharp stump of a small diameter tree, should be evaluated as hazards if it is possible that a child could fall and be impaled or bruise an internal organ. Stumps or roots presenting this sort of risk should be removed.

Stability. Natural objects installed in the environment should be stable if the intent is for children to sit, walk, stand or climb on them. For example, a stack of large stones used for seating or climbing should either be heavy enough not to move under the weight of many children or should be securely anchored.

Step 4

Conduct a risk assessment of natural features within a designated nature play space.

Generally a manager has no legal duty to assess and mitigate risks in an unmodified natural space. But if an area is designated a nature play area, all features of the space will need to be assessed to ensure that the level of risk presented is reasonable for the intended audience. For example it is foreseeable that dead limbs in a designated play space might fall and injure the children who have been invited to play there, so the agency has greater responsibility to inspect and trim dead limbs.

Step 5

Develop an inspection routine.

An inspection routine should consist of a reasonable inspection schedule and a checklist that identifies potential hazard sources for each setting. The checklist may vary depending on the type of space and geographic location. For example a checklist from Five Rivers Metro Parks applies to a woodland nature play area and includes poison ivy, widow makers (high unsecured limbs that could fall and cause serious injury), sharps (sharp-surfaced protrusions), and landing zone surfacing. A play and learning space in an arid, treeless region that featured a boulder scramble would include boulder stability as an item. Inspections should not be limited to stagnant timeframes but should include observation of play as children may morph the intended usage to a different use than expected.

Step 6

Document and evaluate all incidents.

Developing an inspection routine for a nature play and learning space and documenting all incidents demonstrates conscientious compliance with agency risk management policy to provide safe play and learning settings for children. When required, incident evaluation includes the following steps:

1. Detailed description of the incident.
2. Did an injury result and how serious was it?
3. What was the cause of the injury?
4. Is it possible and practical to remove the cause of injury without reducing play and learning value of the space? If so, the cause should be eliminated.
5. If not, complete a risk assessment of the cause:
 - a) Is the risk of injury apparent to the children who use the play and learning space? If it is not, can it be made more apparent through signage and/or modification?
 - b) What is the likelihood of the incident recurring?
 - c) Is this level of risk acceptable to the agency and community? If the level of risk is not acceptable, the condition should be remediated.
6. A review of prior incident(s) at the site, which may indicate a level of frequency leading to a potential severity of injury.

Step 7

Maintain records of inspections and incident reports coupled with regular staff evaluations and recorded responses.

This record will demonstrate consistent and reasonable risk management, and offer a defense in case of litigation.

Step 8

Communicate with users of the space.

It is important to indicate your agency's commitment to and approach to risk management. Signage on-site is an opportunity to do this, and should also provide clear information about who to contact if there are problems.

From a risk management perspective, a nature play space is no different from other lightly modified natural settings such as trails, ponds, or playing fields. A thoughtful risk assessment and management protocol will make it possible to provide children stimulating and challenging play settings while making sure they are not exposed to unacceptable risk of harm. ■



BALANCING RISKS AND BENEFITS

Linda Kinney Manager of Playwork Programs, The North Carolina Zoo

At kidZone, playworkers accept the fundamental principle of playwork, that children cannot learn life lessons without taking risks, be they social, psychological or physical. Playworkers accept the notion that kids will occasionally get hurt—but to a minor degree. To ensure that serious hurt will not happen, the playworker must make continuous judgments about whether or not each interaction between children (usually more than one) and environment is an acceptable balance of risk and developmental benefit.

A policing approach, born of ignorance and fear on the part of rookie playworkers, lies at one end of the spectrum where the environment is so controlled and apparently “safe” that it offers little developmental benefit. To move the needle further toward a balanced approach, volunteers needed help to recognize and observe the situational affordance and carefully but promptly consider whether the play value balance was reasonable.

An underlying assumption at kidZone was that minor bumps, bruises, grazes, and cuts happen as an integral aspect of adventure play—the adventure of life, if you will. The purpose of risk management is to avoid serious injury by ensuring that potential hazards are not present. The zoo’s design team helped locate items appropriately and to anchor them in place.

One day a large, upside-down root ball was installed. Although considered a “natural play object,” it was positioned completely un-naturally. Playwork staff considered it their obligation to ensure the absence of sharp root ends that could result in eye injury or entrapment. Careful inspection resulted in removing or sawing off the ends of hazardous-looking roots and sanding the ends to reduce sharpness—actions which did not affect the play value of the whole.