

## SUPPLEMENT 2

## Rewriting the ground rules for outdoor play spaces

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Are we protecting our children too much while at play? From the perspective of most professional landscape architects in North America this is a tricky question to answer. Playgrounds are the sites of frequent litigation and professional liability insurance coverage must extend to specialty areas related to playground safety, along with skate park design, and soil testing. The fear of litigation dictates design, unfortunately, and skews the focus of the design process of most play spaces from adventure and challenge to safety and protection. This situation reflects a larger societal belief that children are in danger and are in need of our protection, and it has been documented in much of the literature concerning children's health and public space over the past six years.[1–6] This nuanced understanding of the role of risk in children's development in relation to the design of outdoor play spaces seldom makes its way to debates in landscape architecture. Rather discussions in the professional literature emphasize the need to demonstrate due diligence to safety in the selection of equipment and fall surfaces.

In an effort to show due diligence to children's safety professional designers rely on safety guidelines and standards sold by organizations, such as the Canadian Standards Association (CSA) and the American Society for Testing, Materials (ASTM) International. These organizations sell guides to the technical requirements for the design of outdoor play spaces (as well as the manufacture/ construction, installation, maintenance, and inspection of them). This scope leaves little room to consider the benefits of risk-taking for a developing child—a consideration that should be factored into a playground's design. It is not the purview of these organizations to do so as the writers of these technical documents are typically engineers and manufacturers. However, municipalities often tie funding for playground construction and renovation to the use of these technical guides. The consideration of the benefits of age appropriate risk-taking is not undertaken, as the conformance to technical standards and products become the primary focus of design.

Particularly troubling are discussions among landscape architects and designers themselves regarding the safety of particular materials and equipment is often presented as a quick checklist of “dos and don'ts,” with some materials

and standards promoted as “fail-safe” approaches to the design of children's outdoor play spaces. A case in point is impact-absorbing surfaces, like rubber around play structures. In a 2011 article on playground design by an American landscape architect, he advises readers that, “safety surfacing will cushion falls so that emergency-room visits are not needed.”[7] Not to pick on this particular author (who most likely has the best of intentions) but the statement is indicative of the misinformation provided to and by landscape architects about playground safety and design. The safety surfacing that the author refers to is rubber, poured-in-place or tiles. It is tested, designed, and marketed to landscape architects for applications in children's outdoor play spaces. Yet no material can guarantee the elimination of trips to the emergency room. Moreover, the exact contribution that this surfacing makes to children's injury prevention is debated among epidemiologists and engineers. Davidson et al.[8] modeled energy flow within the wrist when impacting two playground surfaces – rubber and bark. They found that rubber surfacing returned more energy to the wrist than bark surfacing, increasing likelihood of fracture. Ball[9] found that while impact-absorbing surfaces, such as rubber tiles, were installed throughout the UK between 1981-1999, there were few cost-benefits to justify their expense, and there has been no apparent trend in playground injury cases since the surfacing was installed. This is an important consideration because outdoor play spaces have limited sources of funding, and the cost associated with implementing expensive surfacing will take funds away from other parts of the design. So while impact-absorbing surfaces' contribution to injury prevention is debatable, the promotion of its use in the literature in landscape architecture continues.

These uncertainties about the safety of particular materials also contribute to the narrowing of the palette of play surfaces and structures designed across North America and in the UK. Impact-absorbing surfaces account for the carpet in what Woolley and Lowe[10] call the KFC (Kit, Fence, Carpet) playground design style commonly found throughout the UK. KFC playgrounds are ubiquitous in Canada too. Impact-absorbing surfaces featured prominently in my own analysis of sixteen outdoor play spaces at licensed childcare centres in the city of Vancouver, British Columbia. Of the sixteen centres studied, eight contained primarily rubber matting as

surfacing for the play space.[11] We also found that impact-absorbing surfaces had little or no play value compared with sand or other loose material. During focused interviews with early childhood educators working at these centers, it was noted that the rubber could not be manipulated by the children. They also revealed that they were very aware of how expensive the rubber was, and that sand combined with sun and water eroded its surface. As a result they spent a good deal of time keeping sand away from this expensive surfacing.[12] Wooley and Lowe[10] also found that the KFC playgrounds they studied in the UK failed in providing manipulation and interaction with the environment. In short, substituting sand for rubber surfacing removes a valuable play element from the play space, especially for young children.

Play structures are another case in point, and represent the *kit* in KFC. Kits are fixed play structures. Although they provide little change over time, and do not offer the manipulation that loose parts offer, they are typically selected for playgrounds designed by landscape architects. With increased concern for safety on most Canadian playgrounds, these fixed structures have become lower and some research suggests that they are not as challenging or thrilling. In our interviews with the Early Childhood Educators working in the centres studied in Vancouver, 57 percent wished there were more challenging equipment and play structures in their outdoor play spaces.[13] This may account for why we found that children were playing on the play equipment in these centres only 13% of their play time.[11] In Cincinnati, Ohio researchers conducting nine focus groups with 49 early childhood educators at 34 childcare centres for preschoolers found that injury prevention on the playground was one of the three barriers to physical activity (finance and focus on academics were the other two barriers).[14] Several participants discussed how overly strict standards had rendered climbers unchallenging and uninteresting to the children, thus diminishing opportunities for physical activity. The new play equipment was thought to be safer, but children quickly mastered it and it became uninteresting to the children. “To keep it challenging teachers noted that children would start to use the equipment in (unsafe) ways for which it was not intended.”[14] Sadly, this could potentially increase the number of injuries in play spaces that were designed with the intention of mitigating injuries.

Regarding litigation, landscape architects should consider the fact that lawsuits are argued based on children’s developmental interest—that they enter adulthood without disadvantage.[15,16] If a landscape architect’s design or planning of a playground or specification of playground equipment causes a developmental disadvantage in a child using the playground then he or she can be found negligent.[17] Yet, could landscape architects be negligent

in providing developmentally supportive play spaces? Are KFC playgrounds with their carpets and kits developmentally disadvantaging children, especially play spaces used on a daily basis on schools grounds and childcare centres?

If so, landscape architects and designers should collaborate with researchers in child development and injury prevention to better understand the relationship between risk-taking, child development, and the design of outdoor play spaces. Landscape architects need more holistic guidance on how to balance risk benefits and safety in their design of play spaces. The UK Play Safety Forum’s *Managing Risk in Play Provision: Implementation Guide*[18] offers play providers a unique guide to strike this balance. This document gives a comprehensive description of risk-benefit assessments for the multi-faceted questions one must ask during the planning and design for an outdoor play space, as well as case studies. It could certainly provide a template for a Canadian version.

In conclusion, landscape architects are currently working with limited information regarding the relationship between child development, risk-taking, and the design of outdoor play spaces. Information on this relationship tends to be taken from guidelines that are often focused on the engineering aspects of the playground features and materials. Since funding is often tied to the design’s conformance to these guidelines, speculation beyond their requirements seldom happens. This limited knowledge has also had the unfortunate consequences of reducing much of the discussion about play space design amongst landscape architects to checklists that in some instance are based on unsubstantiated facts. To move forward, we need to cut across disciplinary boundaries—between landscape architecture, child development, and injury prevention—and adopt a holistic approach to the design of children’s outdoor play spaces. We need to rewrite the ground rules for design to help children engage with the environment rather than only protecting them from it.

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