

INTRODUCTION

Monty L. Christiansen
Conference Chairman

Playground Safety — An International Conference brought together an array of international authorities, scholars, researchers, industry representatives, government officials, and other interested parties to identify, integrate, and explore potential resolutions of issues related to children's play and playground safety on an international basis; to foster information exchange; and to examine the constraints and the propriety of the development of an international consensus playground safety standard.

Plenary and concurrent sessions focused upon four thematic foci:

- the milieu of consequences — which examined accident and injury data, causation, and safety concerns
- the infrastructure of the playground — which included child development and behavior considerations, play value, and surfacing
- the conception, care and feeding of playgrounds — which covered design, maintenance, inspection training/credentialing, and supervision
- the international perspectives — which brought together comparative presentations of several safety national standards and the processes used to create and administer them.

The conference was held October 9-12, 1995, at the Penn State Scanticon Conference Center at University Park, Pennsylvania. It was a continuing and distance education service of the Penn State University College of Health and Human Development, offered in cooperation with the National Recreation and Parks Association — National Playground Safety Institute.

A call for papers was made in late summer of 1994. Potential presenters submitted preliminary abstracts, not exceeding two pages, for either oral presentation at the conference and full publication in these proceedings or poster presentation at the conference and abstract publication in these proceedings. Preliminary abstracts were accepted until February 1, 1995. All submissions were evaluated for content, with authors' names codified to avoid unintentional but inadvertent bias, by an international jury. The jury is identified below:

Dr. Yanni D. Afthinos, University of Athens, GREECE

Michael Hayward, Chair: Canadian/U.S. Playground Safety Harmonization Committee,
CANADA

Peter J. Heseltine, The Royal Society for the Prevention of Accidents, ENGLAND

Mogens Tom Jensen, Kompan, DENMARK

Dr. Nelson Melendez, University of Puerto Rico, PUERTO RICO

Introduction

THE STATUS OF PLAYGROUND SAFETY IN GREECE

Yanni D. Afthinos

One of the first Greek organizations to establish organized playgrounds was the city of Athens, which in 1937 founded its "Youth Center." Since then, many public and not-for-profit institutions as well as private companies offer such service to children with the biggest providers being the municipalities and communities around the country.

Playground Design and Equipment

The local playgrounds are designed as part of the development of public areas by architects and city planners. However, in neither one of these professional specializations is how to design safe play areas taught.

The play equipment of the Greek playgrounds is concerned is purchased: a) from Greek manufacturers, b) from importers and c) from some Greek architectural firms that are specialized in custom playground design and construction. Then, with or without assistance of the suppliers, the playground is assembled by personnel of the city's technical department. With regard to the play equipment' safety standards, one can only assume that at least the imported ones have been constructed according to the country's of origin related standards, if there are any.

Types of Playgrounds

The different play equipment which currently exist in Greek playgrounds can be classified as:

- Individual play pieces made of wood or metal
- Play centers made of wood or metal which combine more than one different individual play equipment
- Adventure playgrounds — Explorative play centers which combine many different play alternatives
- Play areas — A combination of play equipment, space for team sport and other areas of specific play functions, e.g., skateboard, bicycling, etc.
- Commercial play apparatus — i.e., water slides

Progressive Playgrounds: There are a few cases of "beyond the ordinary" playgrounds in Greece. The first used to be an adventure play area designed for the municipality of Filothei during 1961-1964. It consisted of six thematic sub-areas: a) a garden, b) a lake, c) an area with play equipment, d) an area with tents and small houses, e) a sea sand area, as well as f) an area for ball play and games (Daraki, 1979).

A contemporary adventure playground is the "Children Play Museum" located in Ilisia, one of Athens' main parks. This is a creation of Efthimios Varlamis, an internationally known architect who designed and supervised the construction of "a beautiful children neighborhood", where the children are able to interact to each other through "a game of many opportunities, either separately or together from neighborhood to neighborhood in an organized architectural total . . .

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a multi-composed place that inspires and predetermines an atmosphere full of fantasy and dreams." (Varlamis, 1989 p. 8). Unfortunately, this beautiful play area has received no maintenance whatsoever in order to recover from vandalism and it is now an abandoned, unsafe and unsanitary place for children.

There are two other playgrounds in the metropolitan area of Athens that possess "progressive" safety features. The first is located in the municipality of Galatsi. It includes slides located on slopes of small man-made hills in order to minimize the possibility of accidents caused by fall. However, this very safety feature has become an accident hazard due to lack of maintenance. The other playground is an adventure play area located in the municipality of Glifada. It includes swing seats made of vehicle tires which reduces the severity of damage that can be caused to a child from an accidental hit.

Greek Organizations for the Promotion of Playground Safety

Among the several Greek organizations concerned with the aspect of children safety at any capacity, the Center for Research and Prevention of Children's Accidents is the most active as far as the promotion of children's play safety is concerned. It publishes instructions and guidelines and conducts related research. Currently, its staff compiles accident reports from Pedon: Aglaia Kiriakou, a major Greek hospital for children located in the city of Athens. The purpose of this research is to analyze the related data in order to identify the circumstances of children play accidents.

Playground Safety Standards

There are no official standards set for the design, construction, placement or maintenance of playgrounds in Greece, neither by the Ministry of Housing and the Environment (Stoikidou, 1994), nor by the Greek Organization of Standards. However, the later is in the process of developing such guidelines in collaboration with the CEN European Committee for Standardization regarding the playground: safety requirements and testing (prEN 1176 Part 1), installation, inspection and maintenance (prEN 1176 Part 8), as well as operation (prEN 1176 Part 9).

Literature Review on Greek Playground Safety

There is limited information regarding playgrounds in Greece. Only one Greek book by the title *Play Areas— Dream Cities* deals with the design, use and construction of playgrounds. In it, author Pepi Daraki (1979) suggests the following points regarding playground safety:

<i>Play Area and Supervision</i>	<i>Suggestion</i>
Play surface	Smooth play area free of hazards
Fence	Isolation of play areas from the adjacent street traffic
Play areas for different age groups and interests	Separation of preschool children play from older children
Surface under & around the play equipment	Smooth area consisting of rubber mat, grass or sea sand
Sandbox	Border covered by wood with smoothed edges

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<i>Play Area and Supervision</i>	<i>Suggestion</i>
Play equipment	Edges sharp free; handles at see saws; safe distance of play equipment from fence, traffic and other equipment
Play area	Wide enough and free of barriers
Supervision	Guidance of children for safe play behavior

Safety in Day care Centers is a guide that has been published by the Center for Research and Prevention of Children Accidents. Among its contents are:

- Instructions on safety in play areas related to separation of play areas for different types of play, inspection of play area spots for potential safety hazards, discreet supervision of children in play, use of shock-absorbing material under the play equipment, and selection of play equipment with the appropriate height.
- Checklist of playground safety elements related to the general condition of the play area, ground condition under and surround the play equipment, layout and position of the equipment in the playground, e.g., swings, slides, climbers, seesaws, sandboxes.
- Program of safe play. This program provides a list of guidelines to those who supervise children play related to a) information on safe play that children need to be aware of, related to: swings, slides, climbing equipment, horizontal ladders, seesaws; and b) how teachers can help children to obtain habits of safe play.

Research on Playground Safety

"Playgrounds in Greece: An Evaluation of Safety and Standards of Construction" is an exploratory study conducted by students of the Technical / Educational Institute of Athens in 1994. It examined the degree of playground propriety and the use of playground safety standards in Greece. The evaluated areas were 126 randomly selected playgrounds from 12 municipalities located in the two prefectures of Attica (Galatsi, Vironas, Neo Iraklio, Amarousio, Elefsina, Aspropirgos, Egaleo, Haidari) and Samos (Samos, Pithagorio, Karlovasi, Agios Kirikos). The data were collected by local visits and the use of a questionnaire / evaluation checklist.

The Data Collection Instrument: The questionnaire used in this study consisted of six topical areas:

1. Demographic data (i.e., address of the playground, year of construction, etc.)
2. Areas around the playground (i.e., street crossings, adjacent street traffic, surround fence, etc.)
3. The playground area (i.e., surface, play equipment, etc.)
4. The hygiene and sanitary condition of the playground (i.e., existence of garbage box, trash on the ground, etc.)

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5. The schedule of operation and the use of custodians (i.e., time schedule, the custodian's job description, etc.)
6. Aspects that need improvement (i.e., condition of the play equipment, type of fence, etc.).

Findings: The following summarizes the findings of the project:

- The majority of the evaluated playgrounds (73.8 %) were constructed within the past 20 years (1970 to 1989).
- The location of the playground entrance in relation to the adjacent streets was found as unsafe (84.9%) based on the lack of traffic lights (78.6%) and the lack of regulating traffic signs (67.5%).
- An enclosing fence existed in 66% of the evaluated playgrounds, however, for 20% of it, it was found to be inadequate.
- The surface under the play equipment was found to be unsafe since only 41.3% of the evaluated playgrounds were found to have "resilient surfaces" such as dirt, sea sand or grass.
- The evaluated play equipment (swings, slides, seesaws, climbers, horizontal bars, merry-go-rounds) were found to be in good condition since most of them were rated as fair or excellent.
- The evaluated playgrounds were found to be clean. Almost all of them (94.4%) were cleaned regularly (23.8% daily and 65.8% once every week).
- A use time schedule was found to be not existing in 73% of the evaluated playgrounds.
- It was found that those playgrounds with time schedule had also custodians. With regard to emergency situations, 57% of the custodians reported that among their responsibilities is to provide basic first aid care.
- As far as the need for improvements is concerned, it was found that 48.4% need to improve their fence, 7.9% the area under the equipment, 8.7% the anchoring of the play equipment, 57.1% the overall improvement of the play equipment and 8.7% need to improve the distance among the different play equipment.

"Are Greek Schools Safe?" is a study conducted by students of the University of Athens, School of Medicine. It was an evaluation of potential safety hazards on 35 schools (8 high schools and 27 elementary schools) located on 3 islands (Naxos, Kithnos, Kalimnos) and 2 mainland cities (Filipiada and Florina). These locations were selected on convenience. However, the evaluated schools were representing the 90% of all schools existing in these areas. Seven out of the 27 examined elementary schools had playgrounds in their premises, which were examined for safety.

Research Protocol: In order of a playground to be characterized as unsafe, three or more of the five safety conditions in the protocol that follows had to be met:

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1. Unsafe (hard) surface under the play equipment
2. Dangerously deteriorated construction of play equipment (i.e., intruding broken wood or bolts)
3. Unsafe construction of play equipment (i.e., lack of elements that provide safety from falls) or unsafe location of equipment (i.e., too close to children traffic or to other equipment)
4. Poor or non-existing barrier between the playground and the adjacent street traffic
5. Unsafe objects on the ground (i.e., broken glass, used syringes, etc.)

Findings: The seven evaluated elementary school playgrounds were found to be in unsafe condition based on the evaluation criteria set in the research protocol. The common characteristic that contributed to the characterization of the evaluated playgrounds as unsafe reported to be: "very poor maintenance" and "amateur construction".

"An Analysis of Playground Hazards" is a study based on a photographic documentation of accident potential hazards in Greek playgrounds. The 70 documented sites for the evaluations were based on convenience. The pictures were taken by students of the University of Athens, School of medicine, as part of a class project during the Fall semester of 1994. They were interested in documenting safety hazards with the potential to cause children accidents in playgrounds. The photographs were then content analyzed and the safety hazards were compiled and categorized.

Findings: The following table summarizes the findings of this project:

<i>Evaluated Elements</i>	<i>Area and Type of Problem Observed</i>
Play area	<i>Improper design and construction:</i> Cement hems with sharp edges and corners, fence missing from play areas adjacent to street traffic or to the sea, drinking water fountains missing or too tall for the children to reach, not separated play areas according to age, electric wires within reach of the children <i>Poor maintenance:</i> Fence with holes or with iron wires sticking out, totally vandalized and abandoned play areas, uncovered drainage pipes <i>Sanitation:</i> Trash on the ground, piles of removed equipment, cut wood, stones, rusted iron bars, used syringes and needles, as well as holes with dirty water
Play Equipment	<i>Poor design:</i> Tall play equipment without sufficient railing (missing, too short, wide openings among bars), parts of play equipment placed in a way that in case of fall on them a serious injury may result, swing

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seats made of wood or iron, slides without the sufficient tilt at the end, openings on play equipment that can become traps

Improper installation: Equipment too close to different objects and to children traffic, slides with their end too close or too high from the ground, benches facing the opposite direction from the adjacent play equipment, swings very close to the ground

Poor maintenance: Intruding bolts and iron bars, broken parts, cracks on equipment made of wood, rusty or missing parts, chipping paint, S-hooks with open ends, missing bolts from equipment, wear out attaching points

Vandalized equipment: Have not been maintained, have not been removed or have been partially removed

Surface

Improper material: Concrete, gravel, hard dirt, asphalt, paved with flagstones

Poor maintenance: Exposed rocks on the ground, exposed footings of play equipment, holes on the ground, remained pieces of removed play equipment, exposed tree roots, hard sea sand under the play equipment, inadequate drainage under / around the play equipment, uncut grass, exposed iron bars

Conclusions

According to the data presented in this paper, we can conclude that, regarding playground safety in Greece:

- There are no official public safety standards set for playground design, construction or maintenance as of now. However, Greece will soon accept the European CEN standards which are currently under development.
- There are no official statistics kept by hospitals documenting the circumstances of children accidents, especially during play at home, school or playground. However, the Center for Research and Prevention of Children Accidents is currently working toward the improvement of this situation.
- There is no sufficient information available to the professionals in the field related to the design, construction and maintenance of playgrounds. The Center for Research and Prevention of Children Accidents is also working toward the improvement of this situation as well.
- There are no Greek laboratories to test and develop new material to be used for the construction of playground equipment.
- Maintenance is the main safety issue of the Greek playgrounds. It seems that public officials need to be educated to secure safe play environments for children.

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- Research indicates that playgrounds operated by cities are in need for improvement. Nevertheless, they are in better overall condition compared to those located in elementary school yards. However, based on the available data, a generalization of this conclusions to all Greek playgrounds is unwarranted.
- There is a need for more scientific data from research that links children accidents to design, construction and maintenance of playgrounds. This information is needed for the development of safe play guidelines to educate both the public and the related officials.
- Fortunately, there is at least one Greek public agency — . The Center for Research and Prevention of Children Accidents — that actively promotes playground safety. Its role must be supported and strengthened by all interested parties in order to succeed its purpose because safety in children play is an issue too important to overlooked.

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