

# APPENDIX 1

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## BALCONIES AND SWIMMING POOL FENCES





Climbing structures



Climbing structures



Climbing structures



Extra support for climbing



Climbing structures



Climbing structures



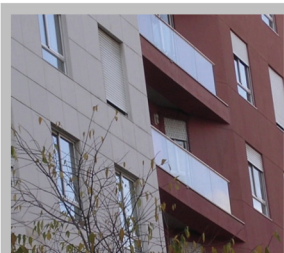
Climbing structures



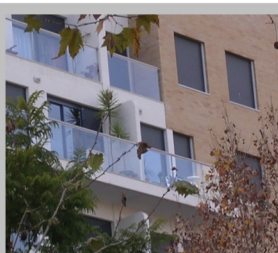
Climbing structures



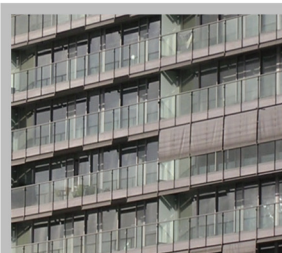
Climbing structures



Glass barrier



Glass barrier



Glass barrier



Protected and unprotected



Incomplete protection



Glass barrier



Glass protection in a climbable barrier



Passing-through toy



Passing-through toy



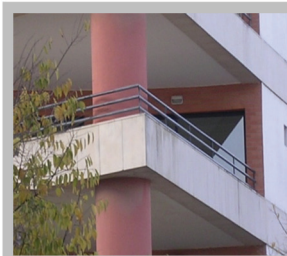
Vertical bars of reduced height



Footholds in vertical bars



Dangerous distance between bars



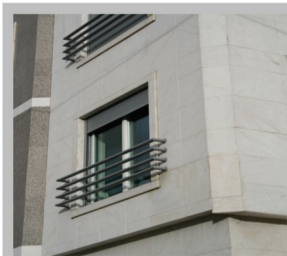
Easy to transpose barrier



Plenty of footholds



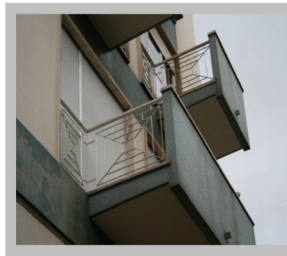
A perfect climbing device



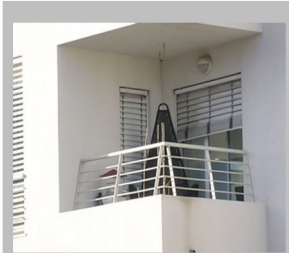
Open the window and climb



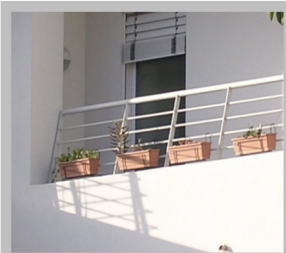
Additional height (first floor)



Footholds



Negative slope



Negative slope



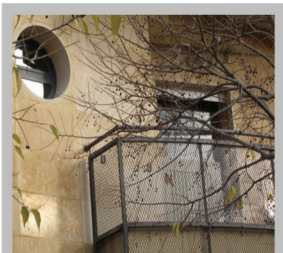
Traditional balconies



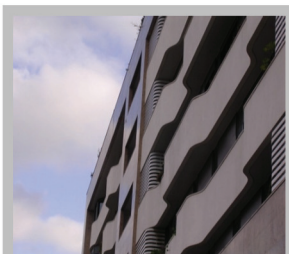
Traditional designs with a negative sope



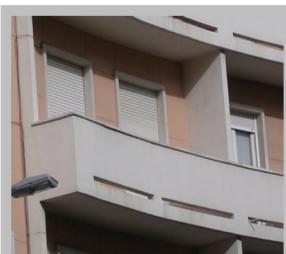
Traditional designs with a negative sope



Grid-mesh pattern



Solid barrier



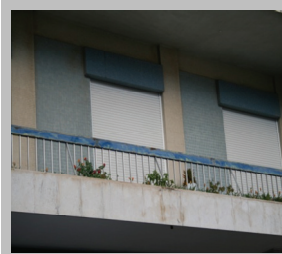
Solid barrier (around 1m)



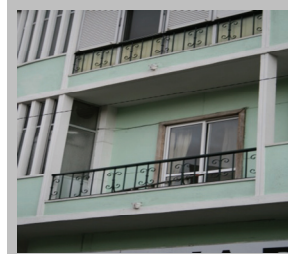
Grid-mesh pattern



Solid and vertical bars



Solid and vertical bars



Solid and vertical bars



Solid and horizontal bars



Solid and mixed bars



Natural footholds



Solid and fancy mixed bars



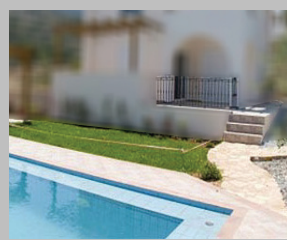
Solid and fancy mixed bars



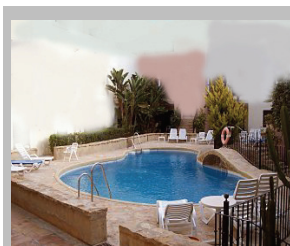
Solid and bars



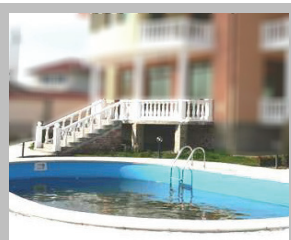
Easy access – no restrictions



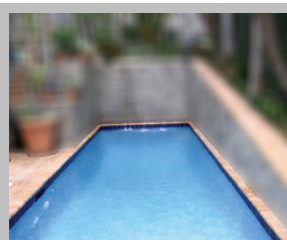
Easy access – no restrictions



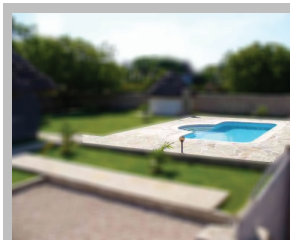
Soft restrictions



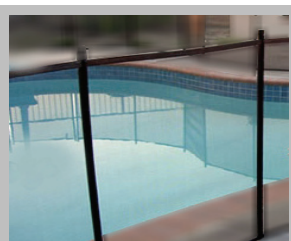
No restrictions



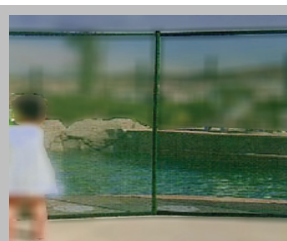
Jump into the water



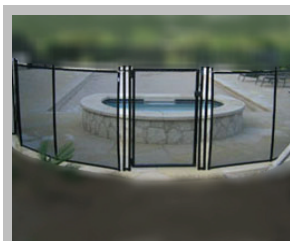
No restrictions



Glass panel barrier



Glass panel barrier



Glass panel barrier





Footholds and stairs



Fence protection



Decorative fence



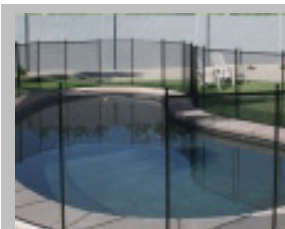
Footholds ???



Fence protection



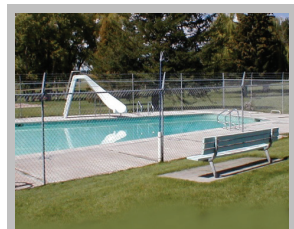
All-around fence



All-around glass panel



Height and fence protection



Mesh fence



## APPENDIX 2

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PRESS CLIPS



## **Criança caiu de 3.º andar e morreu**

ISALTINA PADRÃO

GONÇALO BORGES DIAS/ARQUIVO DN (imagem)

Um menino de três anos morreu ontem na sequência de uma queda de um terceiro andar, em Almeirim. “A criança ficou sozinha em casa enquanto os pais foram buscar o irmão, que é um ano mais velho, ao infantário”, disse ao DN fonte da GNR de Almeirim que esteve no local.

Na Avenida D. João I, onde aconteceu a tragédia, instalou-se o pânico nas pessoas que assistiram à queda da criança da varanda da casa onde morava com os pais e o irmão. “No telefonema de alerta, feito pelas às 18.24, ainda se percebia, através da voz, o choque que se instalou nas pessoas que se aperceberam do ocorrido”, contou ao DN fonte do Instituto Nacional de Emergência Médica (INEM), que enviou para o local uma viatura médica de emergência rápida (VMER) de Santarém.

De acordo com a mesma fonte, “a criança sofreu um traumatismo craniano grave e encontrava-se em paragem cardiorespiratória”. No entanto, frisa, “ainda foram feitas manobras de reanimação mas sem qualquer sucesso, acabando por ser confirmado o óbito da criança no local”.

Segundo o Centro Distrital de Operações de Socorro (CDOS) de Santarém, para o local da ocorrência foram mobilizadas duas viaturas dos Bombeiros Voluntários de Almeirim com quatro elementos, a GNR também de Almeirim e uma VMER de Santarém.

### ***Outros casos***

Em Setembro, uma menina de seis anos caiu de um primeiro andar, em Belas. Ficava em casa com mais duas irmãs (de quatro e dois anos) enquanto a mãe trabalhava - o que acontecia com frequência, segundo os relatos dos vizinhos. A menina ficou ferida, esteve internada, mas resistiu à queda. A Comissão de Protecção de Menores que levou mãe e filhas para um centro de acolhimento.

Há casos de autênticos “milagres”. Como o de um bebé de 22 meses que sobreviveu, sem qualquer fractura, à queda do quarto andar do prédio n.º 125 da Rua Damião de Góis, em Braga, em 16 de Maio de 2006. Testemunhas do acidente comentaram então tratar-se de “um autêntico milagre”.

**[www.amigodopovo.com/not-div54.html](http://www.amigodopovo.com/not-div54.html)**

**Queda aparatosa** – Uma menina de quatro anos saiu praticamente ileso de uma aparatosa queda da varanda de casa dos pais, situada no quarto andar de um bloco de apartamentos, em Spreintebach, na Suíça. A criança desequilibrou-se e caiu sobre o relvado, depois de uma queda de 13 metros, enquanto observava as flores plantadas nos vasos do exterior da varanda. A menina foi transportada ao hospital de Zurique, onde efectuou vários exames médicos que não diagnosticaram nenhum ferimento grave.

**Uma menina de quatro anos caiu ontem de manhã do quarto andar de um prédio em Massamá, concelho de Sintra, a uma altura de mais de 12 metros. A criança está internada em estado grave no Hospital de Santa Maria.** Eram 10h00 quando o Instituto Nacional de Emergência Médica (INEM) foi alertado para a queda da menina. Na Praceta Manuel Faria, na zona da Cidade Desportiva de Massamá, poucos se aperceberam do desespero dos pais da pequena Cristiana. O casal habita no 4.º direito do lote 20 há pouco mais de sete anos. A menina terá trepado para a janela de onde se desequilibrou. Caiu no jardim localizado nas traseiras do edifício e, segundo fonte do INEM, sofreu um traumatismo craniano e outro no abdómen. A mesma fonte referiu que a menina perdeu muito sangue e foi levada para o Hospital de Santa Maria com acompanhamento médico. Ao início da noite o seu estado de saúde ainda não tinha sofrido alterações. Cristiana permanecia ontem à noite internada em estado grave. Os pais, desesperados, aguardavam melhores notícias dos médicos pediatras. Em Massamá, um vizinho que passeava o cão na rua e um outro morador do prédio viram a menina tombar, mas já nada puderam fazer para evitar a queda.

*Barlavento a Sotavento*

## **OLHÃO: criança de 16 meses sobrevive a queda de quinto andar**

05-01-2007 16:27:00

*Uma criança de 16 meses sobreviveu hoje a uma queda de um quinto andar de um prédio em Olhão, que terá sido amortecida por um carro.*

Segundo declarações prestadas à agência LUSA por fonte do Hospital de Faro, a criança está internada nos Cuidados Intensivos de Pediatria, sofreu uma hemorragia cerebral, está estável e apresenta um prognóstico razoável.

O INEM tomou conta da ocorrência e deslocou para o local uma ambulância e uma viatura médica, onde a criança foi estabilizada, tendo sido depois encaminhada para o Hospital de Faro.

O acidente deu-se cerca das 10:00 e o facto de a criança ter caído em cima do automóvel pode ter amortecido o impacto da queda.



**O Ribatejo – 18 de janeiro de 2008**

**Almeirim**

### **Criança de três anos morre em queda do 3º andar**

Um menino de três anos morreu na sequência de uma queda do 3º andar do prédio onde habitava, na Avenida D. João I, em Almeirim, no dia 21 de Dezembro. O pequeno Dylan Silva trepou o gradeamento da janela da sala e caiu desamparado no passeio, cerca das 18h30 da tarde. Um enfermeiro que passava no local e que estava fora de serviço prestou os primeiros socorros à criança, até à chegada dos bombeiros voluntários de Almeirim e da Viatura Médica de Emergência e Reanimação (VMER) do Hospital de Santarém. O óbito foi declarado às 18h55.

As circunstâncias que levaram ao acidente estão a ser investigadas pelo Ministério Público (MP) de Almeirim, que decidirá se vai deduzir acusação contra a mãe por alegada negligência. A criança estava sozinha em casa porque a mãe se ausentou por breves minutos para ir buscar o irmão mais velho, de quatro anos, ao jardim-de-infância, nas traseiras do prédio onde residem, a cerca de 300 metros. Apesar da consternação que o caso gerou na vizinhança, todos lhe tecem elogios e lamentam “a partida que o destino lhe pregou”. “Ela é uma mãe extremosa, sempre muito cuidadora com os filhos”, garante Emília Carolino, proprietária de uma loja na esquina do prédio em frente. “Só posso dizer bem dela”, acrescenta um vizinho de um lote próximo, para quem “o acidente podia ter acontecido enquanto estava na cozinha ou foi à casa de banho”. Os vizinhos que falaram ao nosso jornal descrevem-na como uma pessoa “muito trabalhadora” e “simpática”, tal como o pai, que emigrou para a Bélgica à procura de emprego e não estava junto da família no dia do acidente. O funeral realizou-se apenas na véspera de Natal devido a um erro do na escala dos tribunais de turno; o processo da ocorrência foi enviado para o Tribunal de Santarém, quando devia ter sido remetido ao delegado do MP de serviço no Tribunal do Cartaxo. A autópsia foi realizada na segunda-feira e por “ter havido boa vontade para resolver o problema, tendo em conta que houve ponte da função pública”, adiantou ao nosso jornal uma fonte próxima do processo, reconhecendo que foi “uma situação confrangedora para a família”.



## **Four-story fall inspires push for ‘Laela’s Law’**

Daily Record and the Kansas City Daily News-Press, Aug 7, 2006 by Bill Clements

Laela climbed into an open window from inside a fourth-floor apartment, leaned forward and tumbled 40 feet to the concrete below when a window screen broke. The little girl is recovering well, says her grandmother Janice Shaugobay, who describes Laela as a miracle. But not every infant or child who encounters a window screen in similar circumstances is as lucky. On April 20, in Southfield, Mich., 16-month-old Saviour Allah dropped 70 feet to his death after pushing through an open window’s screen from inside his family’s seventh-floor apartment. In this case, too, the infant climbed up to the window via furniture placed underneath an open window. Experts say parents should take steps to prevent such accidents by removing furniture or beds near windows. They also advise parents not to rely on screens built only to keep insects out by installing window guards or stops, which prevent windows from being raised more than 4 inches. Minnesota would become the first state to mandate the use of stronger, security-type window screens for some new developments under a bill that is expected to be introduced next year. State Sen. Linda Berglin is writing legislation that would require sturdier screens for windows in new multiunit residential buildings of more than two stories. We’re also looking into the possibility of requiring these screens for all rehabbed and retrofitted multiunit buildings, Berglin says. She’d like to push the bill through the Legislature in 2007, although she expects to encounter industry opposition in the beginning. Critics claim that screens are built only to keep bugs out, and building stronger ones will sharply increase the cost of manufacturing screens. Conventional screens cost about \$10, and security screens cost \$60 to \$100. Berglin says the stronger screens are cheaper in the long run. Most multiunit buildings encounter quite a lot of expense in replacing existing screens, she says. So because these security screens are so sturdy and durable, they won’t have to be replaced and will save money long term. Berglin says that is the message she plans to convey to builders and landlords.

*BBC News July, 31 2007*

### **Head guilty over boy's fatal fall**

**A headmaster has been found guilty of breaching health and safety laws after the death of a three-year-old pupil.**

Kian Williams died in August, 2004, a month after jumping off steps at Hillgrove, a private school in Bangor, Gwynedd, while pretending to be Batman.

James Porter, 66, was convicted by an 11-to-one majority after a seven-day trial at Mold Crown Court.

The judge, who will fine the headmaster later, said unsupervised access exposed Kian and other children to risk.

Kindergarten pupil Kian, from Bethesda, had been carrying a Spiderman toy when he jumped from the fourth step from the bottom of the flight.

He landed face forwards, causing head injuries which led to a coma and pneumonia, and died in hospital a month later.

The court was told the pneumonia that Kian had developed had been a strain of MRSA resistant to antibiotics, and there could be "no doubt" the infection had caused Kian's death.

The jury was told there had been only one teacher on duty supervising 59 pupils when the incident happened during the morning break.

The teacher had positioned herself so she could supervise both upper and lower playgrounds.

**"Schools and nurseries should be safe environments where parents feel totally safe leaving their children "**

Jacqueline Williams, mother

Last Updated: Tuesday, July 17, 2007 | 7:12 PM ET

## **Toronto child dies in fall from highrise**

**CBC News**

A two-year-old boy has died after falling 11 storeys from a Toronto highrise balcony Tuesday morning.

Police said the child fell from a building on Shuter Street in the Regent Park area just after 8 a.m. ET. He suffered head injuries and was declared dead after being taken to hospital.

The boy's mother and two other children were home when the boy fell, police said.

Workers with Toronto emergency services told CBC News that they have responded to 10 calls of falling children since May.

They urged parents to be vigilant in supervising near windows, balconies and decks. Windows should be fitted with locks to prevent them from opening more than 10 centimetres.

At a news conference Tuesday, Toronto police also urged parents to explain the dangers of falls from windows or balconies to their children.

**The Chronicle of Higher Education**

A CASE TO CONSIDER

### **Are Your Old Buildings Dangerous?**

By WILLIAM P. HOYE

Henricksen v. State (2004)

In November 1995 a 3-year-old child named Hunter slipped between the stairway balusters of a second-story open stairwell at the Montana State University at Bozeman library. He fell about 20 feet, landing on the left side of his head on the concrete floor below.



NRMA CareFlight

### **Toddler drowns in backyard pool (Kenthurst)**

Ian Badham

26th December 2007, 12:30pm

Desperate efforts by his parents and medics were unable to revive a year-old boy who drowned in his family's backyard pool at Kenthurst, in Sydney's north-west, today.

Ambulance officers alerted NRMA CareFlight to the incident following a "000" phone call at 10.20 am.

The toddler's mother and father were carrying out CPR when the NRMA CareFlight doctor landed at the house, with ambulance paramedics joining the resuscitation effort.

This is the third drowning of a child in a backyard pool which NRMA CareFlight trauma teams have attended this summer.

NRMA CareFlight

### **Young children survive balcony fall (Greenacre)**

Ian Badham

23rd December 2007, 5:00pm

Two young children were taken to hospital suffering head injuries after they fell from the balcony of a unit a Greenacre, in Sydney's south west, today.

Ambulance officers and an NRMA CareFlight trauma team rushed to the children at Waterloo Street after being alerted to their plight with a "000" call at 3.45 pm today.

The NRMA CareFlight doctor said the four-year-old girl and three-year-old boy fell three metres from the balcony.

Initially reported as unconscious the girl was semi-conscious when the trauma doctor landed in an adjacent block of land minutes after the alert, while the boy escaped with minor injuries.

Both were taken to the Westmead Children's Hospital for observation, in a stable condition.

San Francisco Chronicle

## **2 children drown in their backyard swimming pool**

Saturday, October 27, 2007

An Antioch woman who left her two young children playing alone in the backyard Friday returned after a few minutes to find the siblings had gotten past a security fence and drowned in the family's swimming pool, authorities said. Three-year-old Victor Cano and his 22-month-old sister, Adamari Cano, were pulled from the pool on the 1100 block of East 13th Street about 12:35 p.m., authorities said. They were taken to Sutter Delta Medical Center in Antioch, where they were pronounced dead.

Authorities said the children had been playing in the backyard when their mother, 21-year-old Daniela Espinosa, went inside to use the restroom. When she came out several minutes later, she could not see the children, then realized they were in the pool, authorities said.

She told police that the children had not been playing near the pool when she went inside the house. The security fence sets off the pool from the rest of the yard, but Victor and Adamari, who would have turned 2 in December, somehow managed to get past it.

Espinosa screamed and jumped in the water, and neighbors ran to help and called 911. The water was murky and green, however, and authorities said the mother initially had difficulty finding her children.

She had pulled them out of the water, unconscious and not breathing, by the time rescue workers arrived. It's unclear how long the children were in the pool.

Associated Press - January 10, 2008 1:35 PM ET

### **Toddler drowns in backyard swimming pool**

COLLEYVILLE, Texas (AP) - A suburban Fort Worth toddler has apparently drowned after falling into a backyard swimming pool.

The Tarrant County Medical Examiner's Office identified the dead girl as Dylan Barnard of Colleyville, who would have turned age two tomorrow. She was pronounced dead last night at Cook Children's Medical Center in Fort Worth.

Colleyville officials say Dylan and an older sibling had been playing near the front of their home when the older child went inside. Dylan didn't follow. Within seconds, Dylan's mother found her unconscious in the family's backyard swimming pool and pulled her out.





## **Another child dies in a family swimming pool**

Alex Tibbitts

December 14, 2007

A THREE-YEAR-OLD girl has drowned in the Southern Highlands, taking the number of child drownings in Australia to 11 in the past fortnight.

Last week a two-year-old girl drowned in an inflatable pool in Curl Curl.

The Royal Life Saving Society last month released its 2007 National Drowning Report, which revealed that 35 infants and toddlers had drowned in 2006-07

The latest victim was discovered in the family's fenced pool in Hawthorn Road, Bargo, by her elder brother last night, a neighbour said. He had alerted his mother, the neighbour said.

Nearby residents including a nurse performed resuscitation for 10 minutes until police arrived, followed by ambulance officers about 15 minutes later.

"Police officers attempted CPR on the child until she was taken by ambulance to Campbelltown Hospital, but she died en route," a police spokeswoman said.

Police remained at the house to continue their inquiries for the coroner's report, but said there were no suspicious circumstances. The girl's father, a truck driver, was away when the accident occurred.

The Royal Life Saving Society has called child drownings a national tragedy and has urged parents to redouble their water safety efforts. Of the 11 children who have drowned in the past fortnight, three were toddlers.

Last week Maia Comas was found floating face down in 15 centimetres of water in the front yard of her Curl Curl home.

A neighbour tried to resuscitate her before paramedics arrived. She was taken to Mona Vale Hospital unconscious but could not be revived.

The society is trying to highlight the issue through its Keep Watch program. “The Keep Watch campaign reminds backyard pool owners of the importance of restricting a child’s access ... and constantly supervising children when they are in, on or around the pool,” said the society’s chief executive, Rob Bradley.

“Parents mistakenly believe they can listen out and will hear their child drowning. Drowning is swift and silent; it is not generally accompanied by children crying out or splashing.”

Of the 35 children under five who drowned in 2006-07, 16 drowned in swimming pools, of which 15 were home pools; six drowned in bathtubs; and 23 fell or wandered into water.

Yesterday a toddler who wandered off was saved by his family’s dogs near Mackay in Queensland. Police said an Andergrove woman had found the two-year-old and the dogs, a Rottweiler-cross and a Staffordshire terrier, on the embankment of her dam about 11am.

The boy was covered in mud, had marks on his upper arms, and there were drag marks in the mud, consistent with the dogs having pulled him out of the water.

## Toddler Dies After Five-Story Balcony Fall

POSTED: 7:35 am EST December 7, 2004

UPDATED: 12:44 pm EST December 7, 2004

**MIAMI** — Investigators are trying to find out how a 16-month-old boy was able to get out of a Miami apartment and scale a fifth-floor balcony railing before falling to his death when his aunt and grandmother were supposed to be watching him.

Javan Trujillo landed on asphalt below the apartment along Northwest 2nd Street and 12th Avenue. He died at Jackson Memorial Hospital.

Police said the child's grandmother, Marta Serrano, 37, and his aunt, Jeannie Paz, 18, were babysitting when the accident happened. Apparently, they didn't realize where the child was.

"There was a chair on the balcony, in fact two chairs. So, you could speculate that the child got up on the chair and was able to get over the railing," said Miami Police Lt. Bill Schwartz.

Police said Serrano and Paz will not be charged.

Friends and family have left flowers, candles and Teddy bears outside the apartment. The child lived there with his grandmother, aunt, mother and great-grandfather.

## Local News

Posted on: Thursday, January 12, 2006

### Child may have climbed railing

By Mike Gordon  
Advertiser Staff Writer

A toddler who fell to his death from a hotel balcony may have climbed over the safety railing instead of squeezing through its vertical protective slats, as was previously thought, the city medical examiner's office said yesterday.

But the boy's father, David Shpigler, stood by the family's account that 3-year-old Samuel Shpigler somehow got through a 5-inch-wide gap between the balcony railing slats before falling eight stories to the ground New Year's Day.

"That's not what happened," David Shpigler said by telephone from his office in Nyack, N.Y. "He went through the slats. The fact that they are not able to rule it out does not change what happened."

The city's Department of the Medical Examiner last week concluded that the boy's cause of death was "multiple internal injuries due to a fall from a height" and was ruled an accident.

But Dr. William Goodhue, the city's first deputy medical examiner, wanted to revisit the balcony of the Ali'i Tower of the Hilton Hawaiian Village. On Jan. 3, he and an investigator measured the slat widths and railing height and his investigator interviewed the Shpiglers and their children.

"We took appropriate measurements at the scene," Goodhue said yesterday. "This information and my autopsy findings lead me to say that I cannot exclude that Samuel Shpigler may have climbed over the railing of their hotel room balcony and fallen to his death."

#### LANAI SAFETY

Tips for parents of small children who live in high-rises:

Make sure there is no furniture on the lanai that a child could climb.

If the balcony railing has vertical slats, make sure the space between the slats is no more than 4 inches wide.

Cover and lock windows within a toddler's reach with grilles or child-proof screens.

Always supervise children when they are on the lanai.

The best way to make sure nothing happens is to lock the balcony door.

Source: State Department of Health

Goodhue would not elaborate further, stating that his conclusions will be part of the written autopsy report when it is released in about four weeks.

Samuel Shpigler had gotten out on the balcony with two young siblings without the rest of the family knowing. Honolulu police have said that the only witness was the oldest of those siblings — a 6-year-old boy.

“We have spoken to them many times,” said David Shpigler, who buried his youngest son Monday. “They have been very consistent in what they told us.”

Shpigler said the children were not allowed on the hotel room’s balcony without adult supervision.

“They were out there when we were not aware they were out there,” he said. “They were able to open the door and get out there. When you check into a hotel room they give you a key to the minibar, but they don’t give you a key to the balcony. Children are safe from getting to alcohol but not from getting on the balcony.”

Cynthia Rankin, a spokeswoman for the Hilton, yesterday said the hotel rooms do not come with keys to the sliding glass door on the balcony. However, they do have a double latching system to secure the door.

“There are building codes that require what is necessary for locks on doors and what is needed for railings,” Rankin said. “Hilton Hawaiian Village is complying with building codes. A physical key that you can put in your pocket is not a building code requirement. It isn’t in any hotel in Hawai’i.”

At 5 inches wide, the gap between the vertical slats on the balcony meets city building codes, but based on an outdated standard not used since 1997.

The 5-inch gap would not be allowed under new construction. It’s legal, though, because the hotel followed city building codes in effect when the railings were first installed.

City building codes now state the gap between vertical slats installed in new buildings, or as part of a remodeling job, cannot be wider than 4 inches.

The handrail also has a minimum height mandated by city building codes: 42 inches. Henry Eng, director of the city's Department of Planning and Permitting, said yesterday that the Ali'i Tower meets that standard. The hotel confirmed that.

Shpigler described his son as "average-sized." He did not think that a 5-inch-wide gap was narrow enough to hold back his son.

After the accident, Shpigler measured the head of another child who was on the balcony that day — his daughter, who is nearly 5 years old. Her head is exactly 5 inches wide, Shpigler said. That helped convince him that his younger son could fit between the slats.

Eric Tash, manager of the state Department of Health's Injury Prevention Program, said parents need to be more aware of the dangers of balconies.

The most important thing is to make sure they are never alone on the balcony, Tash said. Parents also should remove furniture that would allow a child to climb over a railing, he said.

And Tash said to lock the door if possible.

"Kids are very inquisitive and they move quickly," Tash said. "We recommend that they be supervised. But sometimes it is not always possible to do that so you want to make the area as child-safe as possible."



*Child survives 3-storey fall*

**Max Harrold, The Gazette**

Published: Thursday, July 26 2007

After treating the fourth child to arrive at Ste. Justine Hospital this month after plunging from an apartment window, trauma specialist Dickens St. Vil said Thursday that parents need to get the message:

“Keep young children away from windows.

“Don’t let the windows open more than a foot.”

The simple, blunt warning came after Sam-Jeffrey St. Pierre, 4, was rushed to Ste. Justine on Wednesday night after falling out of his bedroom window in Montreal North and hitting the pavement about seven metres below. He was playing with his 6-year-old brother on their bunk bed next to the window when the screen gave way.

Sam-Jeffrey survived only through some “aggressive resuscitation” involving intubation because he could not breathe, St. Vil said.

The boy remained in intensive care yesterday with severe head injuries and a broken left leg.

St. Vil said the three other children - two boys and a girl - whom Ste. Justine has treated after falls from windows this month had severe head trauma and all might have long-term damage that will require therapy for months, if not years.

Normally, the hospital treats about 10 of these cases per year.

“Window screens do not prevent falls,” said St. Vil, 47. “Window bars and barriers do.”

Besides Sam-Jeffrey, St. Vil treated a 5-year-old boy who fell from a second-floor balcony on Tuesday and a 2-year-old girl who fell from a third-floor window on July 12.

The doctor also treated a 2-year-old boy who fell from a fourth-floor window in St. Laurent on July 5. That boy was released Thursday but will require follow-up treatment for broken facial bones and broken teeth, St. Vil said.

Montreal Children's Hospital officials could not be reached Thursday to provide an update on such cases it has treated this summer. But this month, the hospital said it has treated about 50 children in the past decade who had fallen from windows.

Children who fall from heights tend to be boys and many are from poorer neighbourhoods, St. Vil said.

"It's not because I want to judge them, but parents from these areas tend to be busier and don't always have the means" to take precautions, he said.

Alaine Francois, Sam-Jeffrey's mother, was tired and had tears welling in her eyes Thursday as she described her son's fall.

"I love him so much." She realized the bed's placement next to the window was a mistake, she said, but was too focused on her son's condition Thursday to dwell on what caused the accident.

As he fell, the boy hit some electric cables that are strung tightly across the alley behind the apartment building. That probably reduced the impact of his fall, said the building's owner, Carl Dubuche, 42.

"The lights blinked in the building," Dubuche said. "It's a miracle he's still alive."

Following this latest incident, Montreal police Constable Laurent Gingras underscored how important it is for parents to supervise their children, keep furniture away from windows and take precautions - like installing window guards, which are sold in hardware stores.

"This is common sense," Gingras said. "These accidents are preventable."

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## **APPENDIX 3**

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**REFERENCE STANDARDS OF THE EURO-GROWTH STUDY, WHO,  
NHANES AND RAPIL**



**Table 1 - Reference standards of the Euro-Growth Study, WHO and NHANES for 12 MONTHS children and mean values, standard deviation, maximum and minimum of the children of our study.**

12 months			Euro-Growth					WHO					NHANES*					RAPIL					This Study ♂=9; ♀=2			
			P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	Mean	SD	Max	Min
Reaching	M. V. R.	♂																				91.1	3.6	95.5	85.0	
		♀																				95.0	0.0	95.0	895.0	
	A. D. L.	♂																				33.0	0.9	34.1	31.9	
		♀																				32.3	3.0	34.4	30.1	
T. H.	♂																				36.2	1.7	39.6	33.8		
	♀																				33.5	3.0	35.6	31.3		
Stature	♂	72.0	72.9	76.0	79.2	80.0	71.8		75.7		79.7	73.9	74.8	80.9	86.7	88.9					80.0	2.9	83.7	75.6		
	♀	70.7	71.7	74.7	78.0	78.9	69.8		74.0		78.3	-	74.2	80.2	-	-					79.1	0.6	79.5	78.7		
Passing Through	H. C.	♂	44.9	45.4	47.0	49.0	49.3	44.0		46.1		48.2									47.9	1.0	49.6	46.2		
		♀	43.9	44.3	46.0	47.5	48.0	42.7		44.9		47.1									46.8	0.5	47.1	46.4		
	B. B.	♂																			13.0	0.5	14.0	12.2		
		♀																			12.6	0.2	12.7	12.4		
	A.P.C.B.	♂																			11.6	0.7	12.9	10.6		
		♀																			10.4	0.3	10.6	10.2		
Grasping, Strength and Body mass	H. L.	♂																			9.6	0.4	10	9.1		
		♀																			8.8	0.0	8.8	8.8		
Weight	♂	8.6	9.0	10.2	11.7	12.2	8.1		9.6		11.5	8.9	9.5	11.1	13.1	13.4					11.4	1.1	13.2	9.7		
	♀	8.0	8.3	9.5	11.1	11.6	7.3		8.9		11.0	-	9.1	10.6	12.9	-					10.9	0.5	11.2	10.5		

\* (12-23 months), Maximum Vertical Reaching (MVR), Acromiale-Dactylion Lenght (ADL), Trochanterion Height (TH), Stature, Head Circumference (HC), Biparietal Breadth (BB), A-P Chest Breadth (APCB), Midstylon-Dactylion Lenght(HL), Weight.



**Table 2 - Reference standards of the Euro-Growth Study, WHO and NHANES for 24 MONTHS children and mean values, standard deviation, maximum and minimum of the children of our study.**

24 months			Euro-Growth					WHO					NHANES					RAPIL					This Study ♂=12; ♀=8					
			P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	Mean	SD	Max	Min		
Reaching	M. V. R.	♂																				105.1	7.8	120.1	94.5			
		♀																					103.0	5.5	115.0	96.3		
	A. D. L.	♂																					37.2	2.3	40.5	33.2		
		♀																						36.5	1.9	40.5	33.9	
T. H.	♂																						41.4	2.6	44.6	37.4		
	♀																						40.0	3.1	46.1	36.1		
Stature	♂	83.0	84.2	<b>88.0</b>	91.9	93.0	82.1		<b>87.1</b>		92.1												89.4	4.3	95.6	81.7		
	♀	82.0	83.5	<b>87.1</b>	91.0	92.6	80.4		<b>85.7</b>		91.0		84.7	<b>91.0</b>	97.6								88.3	4.4	97.8	85.2		
Passing Through	H. C.	♂	47.0	47.5	<b>49.5</b>	51.2	51.8	46.0		<b>48.3</b>		50.0											48.5	2.8	50.1	39.9		
		♀	46.0	46.7	<b>48.4</b>	50.0	50.0	44.9		<b>47.2</b>		49.5												48.9	1.0	50.4	47.6	
	B. B.	♂																						13.0	0.5	13.8	12.3	
		♀																							12.6	0.4	13.2	11.9
	A.P.C.B.	♂																							12.0	0.5	13.1	11.3
		♀																							11.1	0.5	11.9	10.4
Grasping Strength and Body mass	H. L.	♂																						10.4	0.6	11.0	9.2	
		♀																							10.1	0.6	10.9	9.2
	Weight	♂	10.7	11.2	<b>12.8</b>	14.6	15.3	10.1		<b>12.2</b>		14.7	11.1	11.5	<b>13.7</b>	15.9	16.8							14.3	1.3	16.3	12.5	
♀		10.2	10.7	<b>12.3</b>	14.4	15.0	9.4		<b>11.5</b>		14.2	-	11.1	<b>12.9</b>	15.6	-							13.3	2.2	18.0	10.9		

Maximum Vertical Reaching (MVR), Acromiale-Dactylyon Length (ADL), Trochanterion Height (TH), Stature, Head Circumference (HC), Biparietal Breadth (BB), A-P Chest Breadth (APCB), Midstlylion-Dactylyon Length(HL), Weight.



**Table 3 - Reference standards of the Euro-Growth Study, WHO and NHANES for 3 YEARS children and mean values, standard deviation, maximum and minimum of the children of our study.**

3 Years			Euro-Growth					WHO					NHANES					RAPIL					This Study ♂=3; ♀=8			
			P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	Mean	SD	Max	Min
Reaching	M. V. R.	♂ ♀																				<b>116.7</b> <b>126.7</b>	1.5 6.5	118.0 137.7	115.0 117.8	
	A. D. L.	♂ ♀																				<b>40.8</b> <b>43.2</b>	1.1 2.2	42.0 46.3	39.8 39.8	
	T. H.	♂ ♀																				<b>46.7</b> <b>49.5</b>	0.6 3.1	47.3 54.7	46.1 45.7	
	Stature	♂ ♀	91.4 90.1	92.5 91.6	<b>97.0</b> <b>96.0</b>	101.5 101.3	102.9 102.5	90.0 88.8		<b>96.1</b> <b>95.1</b>		102.2 101.3		92.5 92.6	<b>98.8</b> <b>98.1</b>	103.9 102.2						<b>95.2</b> <b>102.5</b>	1.6 4.4	96.4 109.7	93.4 96.4	
Passing Through	H. C.	♂ ♀	48.0 47.2	48.6 47.8	<b>50.6</b> <b>49.5</b>	52.5 51.1	53.0 51.9	47.1 46.2		<b>49.5</b> <b>48.5</b>		51.8 50.8									<b>50.1</b> <b>49.7</b>	0.1 1.4	50.2 51.8	50.0 48.1		
	B. B.	♂ ♀																				<b>13.2</b> <b>13.4</b>	0.2 0.5	13.4 13.9	13.0 12.7	
	A.P.C.B.	♂ ♀																				<b>12.4</b> <b>12.3</b>	0.3 0.5	12.7 13.0	12.1 11.5	
Grasping, Strength and Body mass	H. L.	♂ ♀																				<b>10.8</b> <b>11.6</b>	1.0 0.4	11.7 12.2	9.8 11.0	
	Weight	♂ ♀	12.7 12.4	13.2 12.8	<b>15.0</b> <b>14.7</b>	17.5 17.2	18.1 18.1	11.8 11.3		<b>14.3</b> <b>13.9</b>		17.5 17.3		12.9 12.9	<b>16.0</b> <b>15.0</b>	18.8 17.5						<b>15.0</b> <b>15.9</b>	1.8 2.0	16.6 18.7	13.1 13.4	
	Strength (♂=1; ♀=8)	♂ ♀																				<b>3</b> <b>5.1</b>	0 2.0	3 8.5	3 2.3	

Maximum Vertical Reaching (MVR), Acromiale-Dactyliion Lenght (ADL), Trochanterion Height (TH), Stature, Head Circumference (HC), Biparietal Breadth (BB), A-P Chest Breadth (APCB), Midstlylion-Dactyliion Lenght(HL), Weight, Strength.





**Table 4** - Reference standards of the WHO, NHANES and RAPIL for 4 YEARS children and mean values, standard deviation, maximum and minimum of the children of our study.

4 Years			Euro-Growth					WHO					NHANES					RAPIL ♂=65; ♀=71					This Study ♂=6; ♀=8			
			P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	Mean	SD	Max	Min
Reaching	M. V. R.	♂																				<b>133.7</b>	8.2	144.3	121.5	
		♀																					<b>131.7</b>	5.9	140.6	123.7
	A. D. L.	♂															41.5	42.1	<b>44.4</b>	47.6	48.7	<b>46.5</b>	3.1	50.1	42.1	
		♀															40.1	40.7	<b>43.4</b>	46.7	47.7	<b>44.4</b>	2.0	47.5	41.0	
T. H.*	♂															45.2	45.3	<b>46.5</b>	49.2	50.3	<b>53.2</b>	3.2	59.0	50.2		
	♀															43.1	43.9	<b>46.4</b>	48.3	48.7	<b>52.0</b>	2.3	56.4	48.5		
Stature	♂						96.4			110.2						99.9	101.2	<b>106.3</b>	112.	114.4	<b>107.6</b>	5.6	116.5	100.0		
	♀						95.6			109.8						96.6	98.5	<b>104.9</b>	110.7	112.3	<b>105.8</b>	3.6	112.1	101.6		
Passing Through	H. C.	♂					47.8			50.2												<b>51.2</b>	0.9	52.7	50.2	
		♀					47.0			49.3													<b>50.8</b>	1.1	52.0	49.2
	B. B.	♂																				<b>14.2</b>	0.5	14.7	13.4	
A.P.C.B.	♂															10.8	11.3	<b>12.4</b>	14.3	15.2	<b>12.8</b>	0.5	13.6	12.3		
	♀															10.5	10.8	<b>12.0</b>	13.2	13.6	<b>12.4</b>	0.7	13.5	11.5		
Grasping, Strength and Body mass	H. L.	♂																				<b>12.0</b>	0.7	12.5	10.6	
		♀																				<b>11.9</b>	0.7	12.9	10.8	
	Weight	♂						13.3			16.3						13.3	14.0	<b>17.1</b>	21.8	23.5	<b>18.6</b>	1.8	20.2	16.0	
♀							12.9			16.1						13.4	14.0	<b>16.5</b>	19.8	21.0	<b>17.4</b>	2.3	21.3	14.0		
Strength (♂=6; ♀=7)	♂																					<b>8.3</b>	3.4	12.5	4.0	
	♀																					<b>6.9</b>	2.3	8.5	2.3	

Maximum Vertical Reaching (MVR), Acromiale-Dactylion Lenght (ADL), Trochanterion Height (TH), Stature, Head Circumference (HC), Biparietal Breadth (BB), A-P Chest Breadth (APCB), Midstlylion-Dactylion Lenght(HL), Weight, Strength.

\* T.H. RAPIL corresponds to the difference between stature and sitting height and T.H. in our study it corresponds to trochanterion height.



**Table 5 - Reference standards of the WHO, NHANES and RAPIL for 5 YEARS children and mean values, standard deviation, maximum and minimum of the children of our study.**

5 Years			Euro-Growth					WHO					NHANES					RAPIL ♂=89; ♀=68					This Study ♂=16; ♀=13				
			P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	Mean	SD	Max	Min	
Reaching	M. V. R.	♂																					<b>142.3</b>	8.9	161.8	125.0	
		♀																						<b>138.3</b>	6.3	145.0	126.0
	A. D. L.	♂															44.0	44.8	<b>47.9</b>	51.4	52.5		<b>49.1</b>	3.1	55.9	43.1	
		♀															43.1	43.9	<b>46.8</b>	50.5	51.7		<b>47.0</b>	2.4	50.3	42.7	
T. H.*	♂															47.7	48.2	<b>50.6</b>	53.8	54.8		<b>56.2</b>	4.3	65.0	48.4		
	♀															47.6	48.2	<b>50.5</b>	53.4	54.3		<b>55.1</b>	2.8	58.9	50.1		
Stature	♂						102.3		<b>110.0</b>		117.6		105.8	<b>114.2</b>	119.1		103.5	105.6	<b>112.5</b>	118.6	120.3		<b>115.6</b>	10.5	144.1	100.4	
	♀						101.6		<b>109.4</b>		117.2		106.5	<b>111.9</b>	119.5		102.5	104.2	<b>110.8</b>	117.9	119.9		<b>111.6</b>	4.3	116.4	103.4	
Passing Through	H. C.	♂					48.3		<b>50.7</b>		53.2												<b>52.1</b>	1.0	54.0	50.2	
		♀					47.6		<b>49.9</b>		52.3													<b>50.7</b>	1.5	52.6	49.0
	B. B.	♂																						<b>14.1</b>	0.6	15.3	13.1
♀																								<b>13.6</b>	0.6	14.3	12.5
A.P.C.B.	♂															11.4	11.6	<b>12.9</b>	14.6	15.6		<b>13.0</b>	0.6	13.8	12.0		
	♀															10.3	11.1	<b>12.6</b>	13.9	14.9		<b>12.6</b>	0.8	14.2	11.4		
Grasping, Strength and Body mass	H. L.	♂																					<b>12.6</b>	0.8	14.4	11.0	
		♀																						<b>12.4</b>	0.8	13.6	11.2
	Weight	♂						14.7		<b>18.3</b>		23.0		17.0	<b>20.7</b>	26.0		15.2	16.1	<b>20.0</b>	26.2	28.7		<b>20.6</b>	3.5	30.8	15.0
		♀						14.4		<b>18.2</b>		23.5		16.6	<b>19.2</b>	26.9		14.6	15.4	<b>18.9</b>	24.4	26.7		<b>19.8</b>	3.1	23.2	13.7
Strength	♂																						<b>9.7</b>	3.4	19.3	5.5	
	♀																							<b>8.5</b>	2.3	12.5	5.5

Maximum Vertical Reaching (MVR), Acromiale-Dactylion Lenght (ADL), Trochanterion Height (TH), Stature, Head Circumference (HC), Biparietal Breadth (BB), A-P Chest Breadth (APCB), Midstylion-Dactylion Lenght(HL), Weight, Strength.

\* T.H. RAPIL corresponds to the difference between stature and sitting height and T.H. in our study it corresponds to trochanterion height.



**Table 6** - Reference standards of the NHANES and RAPIL for 6 YEARS children and mean values, standard deviation, maximum and minimum of the children of our study.

6 Years			Euro-Growth					WHO					NHANES					RAPIL ♂=207; ♀=223					This Study ♂=4; ♀=2			
			P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	P5	P10	P50	P90	P95	Mean	SD	Max	Min
Reaching	M. V. R.	♂																				151.3	6.1	158.3	145.3	
		♀																					150.2	3.3	152.5	147.8
	A. D. L.	♂															46.3	47.3	50.9	54.7	55.7	51.6	2.7	53.9	48.6	
		♀															45.7	46.6	49.9	53.8	55.0	50.6	1.1	51.4	49.8	
	T. H.*	♂															50.4	51.2	54.4	57.8	58.8	61.1	2.1	63.0	58.8	
		♀															51.3	51.9	54.3	57.8	59.0	60.8	1.6	61.9	59.7	
	Stature	♂											111.6	119.3	125.9		109.7	111.7	118.5	124.9	126.6	120.8	3.1	123.7	117.8	
		♀											110.2	117.2	124.0		108.5	110.4	117.1	123.9	125.9	119.6	3.1	121.8	117.4	
Passing Through	H. C.	♂																				51.3	0.7	52.3	50.7	
		♀																					51.1	0.4	51.3	50.8
	B. B.	♂																					13.9	0.5	14.4	13.2
		♀																					13.5	0.3	13.7	13.3
	A.P.C.B.	♂															11.8	12.2	13.2	15.0	15.8	13.2	0.7	13.7	12.1	
		♀															11.6	11.8	13.3	15.2	16.1	12.6	0.7	13.1	12.1	
Grasping, Strength and Body mass	H. L.	♂																				13.2	0.9	14.3	12.1	
		♀																					13.4	0.1	13.4	13.3
	Weight	♂												18.2	22.7	29.0		17.1	18.0	22.7	30.5	33.8	24.0	4.4	30.4	21.0
		♀												17.9	21.5	27.7		16.3	17.3	21.8	29.4	32.6	22.6	2.1	24.0	21.1
	Strength (♂=4; ♀=1)	♂																					10.6	1.7	12.8	8.8
		♀																					7.5	0	7.5	7.5

Maximum Vertical Reaching (MVR), Acromiale-Dactylion Lenght (ADL), Trochanterion Height (TH), Stature, Head Circumference (HC), Biparietal Breadth (BB), A-P Chest Breadth (APCB), Midstyliion-Dactylion Lenght(HL), Weight, Strength.

\* T.H. RAPIL corresponds to the difference between stature and sitting height and T.H. in our study it corresponds to trochanterion height.



## **APPENDIX 4**

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### **SUCCESS AND FAILURE IN CROSSING DIFFERENT BARRIERS**





Success and failure in crossing different barriers

	Frequency (no help)	Valid Percent (no help)	Frequency (with boxes)	Valid Percent (with boxes)
Barrier A-1 – Failure	10	100	10	100
Barrier A-1 – Success	0	0	0	0
Barrier B-1 – Failure	8	80	8	80
Barrier B-1 – Success	2	20	2	20
Barrier C-1 – Failure	10	100	10	100
Barrier C-1 – Success	0	0	0	0
Barrier D-2 – Failure	9	30	8	26,7
Barrier D-2 – Success	21	70	22	73,3
Barrier E-2 – Failure	23	76,7	20	66,7
Barrier E-2 – Success	7	23,3	10	33,3
Barrier F-2 – Failure	27	90	27	90
Barrier F-2 – Success	3	10	3	10
Barrier G-3 – Failure	7	16,3	7	16,3
Barrier G-3 – Success	36	83,7	36	83,7
Barrier H-3 – Failure	16	36,4	15	34,1
Barrier H-3 – Success	28	63,6	29	65,9
Barrier I-3 – Failure	25	56,8	17	38,6
Barrier I-3 – Success	19	43,2	27	61,4
Barrier J-3 – Failure	28	65,1	27	62,8
Barrier J-3 – Success	15	34,9	16	37,2
Barrier K-3 – Failure	2	4,7	2	4,7
Barrier K-3 – Success	41	95,3	41	95,3
Barrier L-3 – Failure	10	26,3	10	26,3
Barrier L-3 – Success	28	73,7	28	73,7
Barrier M-3 – Failure	29	55,8	23	44,2
Barrier M-3 – Success	23	44,2	29	55,8
Barrier N-3 – Failure	27	52,9	22	43,1
Barrier N-3 – Success	24	47,1	29	56,9

